

Infrastructure Asset Management Plan

City of Spring Park

October 13, 2017

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INTRODUCTION

PURPOSE AND INTENT

The City of Spring Park, like most cities, is responsible for providing a number of services to residents of the community including sanitary sewer, water, storm water management, and facilities for safely transporting vehicles, bicycles, and pedestrians throughout the community. The City owns and maintains several fixed assets to provide the required services, including sanitary sewer facilities, water facilities, storm sewer facilities, roadways, sidewalk, trails, etc. Planning, construction, maintenance and replacement of these facilities come at a significant cost. As assets age they begin to physically deteriorate, increasing the risk of critical failures and costs associated with those failures. Infrastructure failures can result in a wide range of consequences from the inconvenience of service outages/delays, costs for emergency repairs, insurance claims/lawsuits to the potential for serious illness or death.

The Spring Park Mayor, City Council and Staff understand that proper management of the City's assets is critical for the safety of their community and to insure a strong future for the City. In an effort to manage those assets in the most cost effective way, the City approved development of an Asset Management Plan (AMP) for public infrastructure. Public assets, as it pertains to this report, will include the following:

- Streets, Sidewalks, Curb and Gutter, Street Lights
- Sanitary Sewer and Structures
- Storm Sewer and Structures
- Water Main, Hydrants, and Gate Valves

In general, asset management, by definition, includes the planning, design, construction, and maintenance of City infrastructure while maintaining an acceptable level of service at the lowest life cycle cost. The benefits of asset management include:

- Understanding the magnitude and current state of infrastructure
- Improved understanding of life cycle costs
- Proactive approach to infrastructure improvement
- Prioritize infrastructure spending to reduce risk
- Mitigation of emergency cost
- Coordination of services and projects with other utilities and agencies
- Develop a consistent and defensible methodology for infrastructure improvements
- Ability to better communicate cost and improvement to stakeholder
- Improved knowledge of the timing and magnitude of future investments required to operate, maintain, renew, and acquire assets

The ability to implement this plan is contingent on identifying appropriate funding sources for the proposed improvements. This plan is intended to guide City infrastructure spending but it does not constitute a legal commitment on the Council to approve any of the proposed improvements. The plan may be updated or amended from time to time by the City in order to address changing conditions, priorities, or funding availability.

ASSET TYPES

Public infrastructure asset types are defined as follows:

- Streets, Sidewalks, Curb and Gutter, Street Lights
 - Streets – bituminous or concrete pavement of varying width and thickness used to convey vehicular traffic
 - Sidewalks – concrete of varying width and thickness used to convey pedestrian traffic
 - Curb and Gutter – concrete channels along the road used to convey storm water
 - Street Lights – are defined in the inventory as either decorative lights (as seen on Shoreline Drive) or utility pole mounted lights (as seen on the majority of the remaining streets) that assist drivers, cyclists and pedestrians in finding their way in the dark
- Sanitary Sewer (gravity pipe and force main pipe) and Structures (lift stations, manholes)
 - Gravity Sewer – clay or plastic pipe that uses gravity flow to collect and convey wastewater from households to a treatment facility.
 - Force Main – ductile iron pipe that uses pressure to move wastewater from a low point to a high point in the sanitary system
 - Lift Station – a large diameter structure with pumps that collects wastewater and pumps it to a gravity sewer at a higher elevation
 - Manholes – concrete or block structures that provide access to the sanitary sewer system
- Storm Sewer and Structures (catch basins, flared-end sections, overflow control structures)
 - Storm Sewer – reinforced concrete, corrugated metal, or high density polyethylene (HDPE) pipe used to collect and convey storm water
 - Catch Basins – concrete or block structures that collect storm water and introduce it to the storm sewer system
 - Flared-End Sections – engineered pipe ends that dissipate energy and velocity of storm water flow
 - Overflow Control Structures – concrete or block structure that controls the water surface level of a pond, detention basin, or other Best Management Practice (BMP)
 - BMP – stormwater management facilities that provide rate and quality control to stormwater; includes infiltration trenches, infiltration basins, bioretention, porous pavement, grass swales, wet ponds and dry ponds
- Water Main, Hydrants, and Gate Valves
 - Water Main – cast iron, ductile iron or plastic pipe used to distribute pressurized potable water to households, businesses, or public areas
 - Hydrants – above ground connection point to the water system which provides access for firefighting, testing or cleaning the system
 - Gate Valves – valves used to regulate flow in water main system

This asset management plan does not address privately owned portions of the infrastructure system which include private streets/sidewalks/lights, sanitary sewer services, water services, private hydrants/fire protection facilities, or private utilities.

PROJECT APPROACH & METHODOLOGY

The objective of this AMP is to quantify and determine the condition of Spring Park's infrastructure to prioritize future improvements to the system. The assets were reviewed individually, at a high level, to provide a determination of condition independent from the other assets in the area. Once the independent assessments were completed, the condition information for all of the assets was merged and reviewed from a holistic viewpoint to prioritize areas for improvements. The analysis and recommendations provided are based on best practices, generally accepted methods, and expert judgement.

The approach used for this plan included the following steps:

- Develop a complete inventory of the assets, by location, that includes the asset type, material, size, length, width, area, and installation date
- Perform condition assessment based on visual inspection, history of failures, and anticipated life cycle
- Determine estimated infrastructure replacement costs
- Propose a recommended improvements phasing plan prioritized to mitigate risk

Inventory

Sambatek maintains a Geographic Information System (GIS) of the sanitary, storm, and water systems. The current database includes Global Positioning System (GPS) located structures, hydrants, and gate valves. The GIS database served as the primary source of data for the inventory. Field measurements and record/as-built plans from previous infrastructure projects were used to supplement the GIS information and inventory asset size, materials, and dates of installation.

Condition Assessment

The condition of the individual assets was determined using a combination of visual inspections, history of failures, date of installation versus anticipated life expectancy, and industry experience with similar infrastructure in the region. The specific condition assessment evaluation methods for each asset are outlined in individual Infrastructure Groups sections starting on page 6.

Replacement Cost Estimates

The replacement cost for each individual asset was estimated to determine the total value of the assets owned by the City of Spring Park. With this information, the City can determine what levels of resources and funding are required to maintain the infrastructure in a state that meets safety, regulatory and level of service requirements. All estimated replacement costs are based on anticipated 2018 construction costs (no inflationary factors have been applied) and include a 25% construction contingency along with 25% for engineering, legal and administrative services related to the improvements, which provides an estimated Total Project Cost.

Recommended Phasing Plan

A recommended phasing plan for infrastructure replacement was developed based on the condition assessment of the infrastructure and replacement cost estimates. The plan prioritizes replacing infrastructure in the areas that are in the worst condition and/or assume a higher level of physical or financial risk if a failure were to result.

INFRASTRUCTURE ASSET GROUPS

The City of Spring Park owns and maintains many assets but this report is focused on the inventory and analysis of the City’s streets, sidewalks, street lights, sanitary sewer pipe and structures, water distribution system and storm sewer facilities. A condition assessment was completed on each individual asset group, independent of the other asset groups, to prioritize the needs for each asset class. The sections below outline the condition assessment completed for each asset class and summarize the results of the analysis.

STREETS

The City of Spring Park owns and maintains 12,800 linear feet (2.4 miles) of bituminous paved roadways. There are three privately owned streets in the City (Island Drive, West Arm Drive, and a small portion of West Arm Road Central) which the City does not own. In addition to the City and Private roadways, Hennepin County owns a significant amount of the roadway system within Spring Park, including County State Aid Highway (CSAH) 25 (Shoreline Drive), CSAH 51 (Sunset Drive) and CSAH 125 (Interlachen Road). While the County owns and maintains the street and storm sewer along these segments, the sidewalks, street lights, retaining wall, and other features outside of the curb are owned by the City. Figure 1 shows all of the roadway and sidewalks identified for purposes of this report.

In July of 2014, Sambatek, along with the City of Spring Park Staff, inspected and assessed all of City owned streets. Sidewalks, retaining walls, and street lights were included with the street assessment. An inventory of the existing street lengths and widths, sidewalk length, street light type and count, and retaining wall type, height and length was developed and is included in Table 1.

The condition of the existing street pavement was assessed using the Pavement Condition Index (PCI) which was originally developed by the U.S. Army Corps of Engineers and was later standardized in American Society for Testing Materials (ASTM) D5340. The PCI system assigns a numerical rating for the condition of the road segment with 0 being the worst possible condition and 100 being the best (i.e. a new street). The rating system is based on a visual inspection of the surface distresses (type, extent and severity) and the smoothness of the roadway surface. General guidelines for the PCI ratings and estimated pavement improvements are outlined below.

Table 1

PCI Rating Scale and Decision Matrix		
Rating	Condition	Time for Improvement
91-100	Great	16-20+ years
81-90	Good	11-15 years
66-80	Fair	6-10 years
51-65	Poor	1-5 years
40-50	Very Poor	Rehabilitate Now
0-39	Failed	Reconstruct Now

The PCI Ratings and Estimated Time for Improvement for the City’s roadway system are shown in Figure 2 and outlined in Appendix Table 1. The PCI Assessment identified that roughly 64% of the

City's roadway system should be rehabilitated or reconstructed in the next 5 years and another 19% should be improved within 10 years. A summary of the City's roadway system is shown below.

Table 2

Spring Park's Roadway System			
2014 PCI Rating	Time for Improvement	Length of Roadway (Feet)	Amount of City System
91-100	16-20+ years	1,476	11.5%
81-90	11-15 years	717	5.6%
66-80	6-10 years	2,460	19.2%
51-65	1-5 years	6,543	51.1%
40-50	Rehabilitate Now	1,615	12.6%
0-39	Reconstruct Now	0	0.0%

The City owns approximately 12,500 linear feet of sidewalk primarily along Shoreline Drive and Sunset Drive. A visual inspection was completed on the sidewalks to determine the condition and recommend improvements. Generally, the sidewalks are in good condition as the City has conducted a regular maintenance routine of removing and replacing deteriorated segments. There are areas of sidewalk along Shoreline Drive that are settled, cracked and/or showing signs of surface delamination and should be replaced as a general maintenance activity. The existing sidewalk and pedestrian ramps do not meet the current 2010 Americans with Disabilities Act (ADA) Standards for Accessible Design. The 2010 Standards identify specific requirements regarding Pedestrian Access Route (PAR) widths and grades on sidewalks and pedestrian ramps. All public roadway construction projects (new construction or alterations to existing roadways) require the installation or upgrade of pedestrian ramps to comply with the 2010 Standards. Alterations are defined as resurfacing of a roadway from one intersection to another and include pavement overlays (with or without milling) and micro-surfacing. Seal coats, crack seals, painting/striping, patching and other general maintenance activities do not qualify as an alteration or trigger compliance with the 2010 Standards requirements.

The City owns 79 decorative street lights and 46 overhead utility pole street lights. All of the decorative lights are installed along Shoreline Drive, Sunset Drive, Spring Street and Shoreline Place and have been installed recently and are in good condition. The overhead utility pole lights are located throughout the rest of the City and are generally in good condition.

The City has nearly 3,000 linear feet of retaining wall, located primarily along Shoreline Drive. Approximately 1,925 feet of the retaining wall is timber construction with nearly two-thirds of that being less than 3' in height and the remainder ranging from 3' to 6' in height. Generally the retaining wall is in good shape with the exception of timber wall along the Edgewater Apartments. There are some questions regarding the ownership of this segment of wall, which the City should clarify to determine responsibility of liability and replacement. The segment of timber retaining wall along the

north side of Shoreline Drive, between Kings Road and Black Lake Road, is beginning to tilt out towards the street but appears to be maintaining structural integrity.

Recommendations

The Minnesota Department of Transportation (MnDOT) and the Local Road Research Board (LRRB) developed a Systems Preservation Guide: A Planning Process for Local Government Management of Transportation Networks (<http://www.dot.state.mn.us/research/TS/2016/201634A.pdf>) in 2016 which outlines useful methods to address preservation of local roadways. The report outlines a typical local roads maintenance schedule as follows:

Table 3

LRRB Typical 50-Year Maintenance Schedule			
Year	Activity	Year	Activity
1	New Construction	26	Crack Seal
2		27	Seal Coat
3	Crack Seal	28	
4		29	
5		30	Crack Seal
6	Crack Seal	31	
7	Seal Coat	32	
8		33	Crack Seal
9		34	
10	Crack Seal	35	Mill and Overlay
11		36	
12		37	
13	Crack Seal	38	Crack Seal
14	Seal Coat	39	
15		40	
16		41	Crack Seal
17	Crack Seal	42	Seal Coat
18		43	
19		44	
20	Overlay	45	Crack Seal
21		46	
22		47	
23	Crack Seal	48	Crack Seal
24		49	
25		50	Reclaim and Overlay

Over 65% of the City streets have not been rehabilitated or reconstructed 35 years and 50% are showing significant signs of distress. In order to bring the street network up to acceptable standards, the City should rehabilitate or reconstruct all street segments with a current PCI Rating of 80 or lower over the next 15 years. The streets improvements should be prioritized to improve the streets with the lower CPI Ratings first, as identified below:

Table 4

Spring Park Street Improvement Priorities				
Priority	Street	Segment	CPI Rating	Previous Improvements
1	Northern Ave	Sunset to Corporate Limits	44	1968
2	Mapleton Avenue	East End to Sunset	50	1968
3	Park Lane	Sunset to East End	52	1968
4	Black Lake Road	Shoreline to End	54	1993
5	Dickson Avenue	Sunset to Budd	55	1968
6	Interlachen	Shoreline to East End Warren Concrete	56	1968
7	Del Otero Avenue	East End to Bayview	59	1968
8	Shoreline Place	West End to Bayview	59	1968
9	West Arm Road West	Shoreline to End	60	1970
10	Hazeldell Ave.	Northern to Mapleton	62	1968
11	West Arm Central	Kings to West R/W	62	1970
12	Patties Lane	Kings North to East City Hall Lot	63	1970
13	Kings Road North	Shoreline to Warren	65	1970
14	Lilac Road	Northern to Mapleton	67	1968
15	Togo Road	Park to Corporate Limits	67	1968
16	Warren Avenue	Kings Rd N to Interlachen E End Conc Dr	68	1994
17	Spring Street	Sunset to Shoreline	74	2005
18	Rose Hill Lane	Interlachen to End	77	1968
19	Budd Lane	Dickenson to End	78	1968

Since a large portion of the street network requires improvements, the actual prioritization and phasing plan should be based on the recommendations related to the utility improvements outlined later in this report. Open cut installation for utility improvements (digging a trench to remove and replace existing utilities versus a trenchless installation method that doesn't disturb the surface) is much cheaper than trenchless if the roadway above the utilities requires improvements. There are very few funding programs dedicated to street improvements but most of the utility funding programs include costs for replacement of the street section above the utilities. Based on these factors, the utility recommendations will really drive the prioritization of the recommended improvements.

In addition to the City's proposed improvements, Hennepin County currently has a mill and overlay project planned on the following segments of their system in 2019:

- CSAH 15 (Shoreline Drive) from Black Lake Road to the East City Limits
- CSAH 125 (Interlachen Road) from Shoreline Drive to the South City Limits
- CSAH 51 (Sunset Drive) from Shoreline Drive to CSAH 19 (Shadywood Road)

The City should plan to coordinate utility and street improvements in conjunction with the County projects, if possible. This coordinated effort will help to reduce the overall costs for both parties by achieving economies of scale.

Generally, the sidewalk, street lighting, and retaining walls should be reviewed and improved, as needed, in conjunction with the adjacent street improvements project unless critical conditions or imminent failure becomes a concern. The areas of sidewalk along Shoreline Drive that are settled, cracked and/or showing signs of surface delamination should be replaced as a general maintenance activity. These areas were identified for maintenance as part of a 2017 sidewalk replacement project but the City didn't receive quotes from any Contactors due to previous work commitments. The City should request quotes for the work in January 2018 to complete the maintenance work in 2018 as that should provide the most competitive pricing environment for the City. The ADA upgrades to pedestrian ramps will be required when the street adjacent to the ramp is improved. Since the County currently has overlay work on Shoreline Drive (Black Lake Road to the east City Limits), Interlachen Road (Shoreline Drive to south City Limits) and Sunset Drive (Shoreline Drive to Shadywood Road) planned for 2019, the City will be required to upgrade the pedestrian ramps in those areas in conjunction with the County project.

A comprehensive list of recommended improvements and phasing plan is included in the Proposed Capital Improvements section of this plan (page 18).

SANITARY

The City of Spring Park owns and maintains a public sanitary sewer collection system that includes 6 lift stations, 2,800 feet of forcemain pipe, 132 manhole structures and 28,131 feet (5.3 miles) of gravity sewer main pipe (Figure 3). The collection system is divided into 6 primary drainage areas (Figure 4). The flow from each individual drainage area flows by gravity to a lift station, located at the low point of the system in each area. The lift station temporarily collects and pumps the flow up to the adjacent drainage area where it gravity flows to the next lift station downstream. All of the waste eventually flows to Lift Station #6 (located at Shoreline Drive and West Arm Road West) where it is pumped into a Metropolitan Council Environmental Services (MCES) sanitary sewer interceptor and eventually treated at the MCES Blue Lake Wastewater Treatment Facility in Shakopee. MCES meters the flows from Lift Station 6 and charges the City for services based on actual amount of wastewater that they receive from the City.

The majority of the sanitary system was installed in the 1960's. 75% of the original sanitary sewer main and manholes are still in place today. Approximately 82% of the existing sanitary piping is Vitrified Clay Pipe (VCP). VCP has a design life of 50-60 years but soil conditions, expansive soils, installation methods, infiltration induced soil migration, and other factors have a significant impact on the actual life span. The remainder of the system is Polyvinyl Chloride (PVC) pipe, which is the current industry standard.

The sanitary sewer infrastructure assessment was completed April 2016. The City has utilized the services of local Cured-In-Place-Piping (CIPP) companies to inspect the sanitary sewer system using a closed-circuit television (CCTV) system, which sends a small camera unit with wheels into the sewer pipe to videotape the inside of the pipe. The City currently televises approximately 1/3 of the sanitary sewer system pipe every 3 years which provides an updated condition assessment of the entire pipe infrastructure on a 3 year rolling basis. The latest CCTV videos for each segment of pipe were reviewed as part of the AMP. The sanitary sewer pipe was assessed using the National Association of Sewer Service Companies (NASSCO) Pipeline Assessment Certification Program (PACP) as a guideline, which is the standard for pipeline defect identification and assessment. Pipes are graded on a scale of 1 to 5 with a 1 indicating that the pipe is in good condition (i.e. minor defects) and 5 indicating severe structural defects that are a likely pre-cursor to pipe failure. The conditions analyzed include Infiltration and Inflow (I&I), Cracked Pipe, Joint Defects, Sag Conditions, Service Defects, Mineral Deposits, and Debris/Root Intrusion/Grease.

I&I – A condition where clean water (ground water, surface storm water, sump pump discharge, etc.) enters the system through an interconnection or defect. I/I increases overall sewer costs for the City since MCEC charges the City based on the total amount of flow through the system.

Cracked Pipe – Pipe segments experiencing more than hairline cracks were noted in the assessment as those cracks may allow I/I to enter the system and lead to more serious structural deficiencies.

Joint Defects – Pipe joints that are offset, angular or separated were noted in the assessment as they may cause blockage of wastewater, root intrusion, or introduce I/I.

Sag Condition – Gravity sewer pipe is typically installed to flow at a constant grade or slope from manhole to manhole. A sag condition is a common problem in which a section of the pipe either sinks or rises, creating a low area in the pipe. Pipe sags can be an issue because they prevent consistent flow of the wastewater through the system. This could lead to minor issues such as odor complaints or more serious issues such as wastewater solids settling in the pipe sag and reducing capacity or creating pipe blockage. Sag conditions were noted in the assessment based on the estimated depth of pipe sag.

Service Defects – Sanitary sewer service connections are susceptible to structural defects including cracks, broken connections, protruding service pipe into the sanitary main, mineral build-up, etc. These defects can allow I/I to enter the system, cause sewer blockages or lead to structural collapses. Service defects were noted and graded in the assessment.

Mineral Deposits – Sanitary sewer pipe may experience mineral deposits, which are hard calcified deposits that can cause blockages. Deposits over ½" at pipe joints were noted and graded in the assessment.

Debris/Root Intrusion/Grease – Debris, root intrusion, and grease deposits are typical conditions found in sanitary sewer pipes which can lead to blockages or pipe failures. These conditions were graded based on the severity of the issue in the assessment.

A summary of the sanitary sewer pipe condition assessment is outlined in Appendix Table 2 and shown in Figure 5. The segments of pipe in the West Arm Road West area, Sunset Drive/Northeast area, Shoreline Drive East, and Channel Road/Interlachen Road area are in poor condition. These areas are also particularly concerning from an I/I standpoint due to their proximity to the lake and

Based on the results of the CCTV program, the City started a CIPP lining program on the sanitary sewer system in 2014. CIPP lining is one of several trenchless pipe rehabilitation methods used to repair existing sanitary sewer pipe. A resin-saturated tube is placed into the existing sanitary sewer pipe using water or air pressure. Hot water or steam is used to cure the resin which forms a hard, tight-fitting, jointless replacement pipe on the inside wall of the existing sewer pipe. The sanitary sewer service laterals are then cut open with a robotic device that operates inside the CIPP. CIPP lining is a great pipe rehabilitation option for pipe segments that have specific defects (cracks, holes, slight joint defects, etc.) but will not correct significant structural issues in the pipe such as severe offset joints or pipe sags. The City has lined approximately 5,600 feet of sanitary sewer main in a series of lining projects (2014, 2016 and 2017). Figure 6 shows the segments of CIPP lined pipe within the City limits.

Sanitary Structures

The City of Spring Park owns and maintains 6 lift stations and 132 manhole structures on the system (Figure 3). The condition of the sanitary sewer structures was assessed in May 2016 using the NASSCO PACP guidelines. Structures are graded on a scale of 1 to 5 with a 1 indicating that the structure is in good condition (i.e. minor defects) and 5 indicating severe structural defects that are a likely pre-cursor to structure failure. The conditions analyzed include Infiltration and Inflow (I&I), Grout, Adjustment Rings, Casting Corrosion, Broken/Depressed Pavement, and Exposed Aggregate.

I&I – A condition where clean water (ground water, surface storm water, sump pump discharge, etc.) enters the system through a defect in the structure. I/I increases overall sewer costs for the City since MCEs charges the City based on the total amount of flow through the system.

Grout – Grout is a cementitious material often used to seal gaps in pipe connections and between casting rings. Severe grout deterioration may allow I/I to enter the system and lead to more serious structural deficiencies.

Adjustment Rings – Adjustment rings are often placed between the top of the sanitary manhole structure and the steel casting to set the casting at the appropriate height to match the street surface. Typical adjustment ring deterioration includes exposed steel rebar or broken rings which can allow I/I to enter the system and may lead to more serious structural deficiencies.

Casting Corrosion – Steel manhole castings can experience pitting or flaking of the metal surface. This can weaken the casting by making the steel section thinner.

Broken/Depressed Pavement – Broken or depressed pavement adjacent to sanitary manhole castings can be an indication of structural deficiencies within the manhole structure. Holes in the adjustment rings or structure joints can allow sediment into the structure, creating voids around the exterior of the structure and eventually leading to depressions at the surface.

Exposed Aggregate – Microbial Induced Corrosion (MIC) occurs when sulfuric acid, generated from raw sewage, reacts with the properties of cement to diminish the integrity of concrete manhole structures.

The results of the sanitary sewer condition assessment are outlined in Appendix Table 3 and Figure 7. Approximately 71% of sanitary structures were rated a 1 or 2, displaying minor defects. Another 23% of sanitary structures were graded a 3, indicating moderate defects including Inflow/Infiltration (I&I), mild grout deterioration at adjustment rings or pipe penetrations, minor rooting, mild

corrosion on casting, or mild pavement deterioration around casting. The remaining 6% of structures (8 structures total) received grades of 4-5, indicating severe defects in the structure.

Lift Stations and Force Main

The City of Spring currently maintains 6 lift stations and approximately 2,800 feet of force main. The lift stations range in age from 1990 – 2014, with the majority of lift stations having been reconstructed within the last 12 years. The table below shows a break-down of the City-owned lift stations and force main:

Table 5: Lift Station and Force Main Summary

Lift Station	Last Date of Improvement	Force Main		
		Length [lf]	Size [in]	Material
1	2008	270	4	DIP
2	2010	1390	6	DIP
3	2005	490	6	DIP
4	1990	190	4	CIP
5	2014	150	4	DIP
6	2005	290	8	DIP

Proposed Capital Improvements

There are three primary areas of concern within the sanitary sewer collection system:

1. Sunset Drive Area (includes the segments of sewer north and east of the intersection of Sunset Drive and Northern Avenue).
2. West Arm Road West Area (includes the Lift Station #6 service area north of the Dakota Rail Trail).
3. Black Lake Road Area (includes Lift Station #4 and the sanitary sewer south of Shoreline Drive between the west end of Lafayette Lane and Interlachen Road).

There are segments of sewer outside of the three high priority areas that are in poor condition but the immediate needs should be focused on the areas identified above.

In addition to the City’s proposed improvements, Hennepin County currently has a mill and overlay project planned on the following segments of their system in 2019:

- CSAH 15 (Shoreline Drive) from Black Lake Road to the East City Limits
- CSAH 125 (Interlachen Road) from Shoreline Drive to the South City Limits
- CSAH 51 (Sunset Drive) from Shoreline Drive to CSAH 19 (Shadywood Road)

The City should plan to coordinate utility and street improvements in conjunction with the County projects, if possible. This coordinated effort will help to reduce the overall costs for both parties by achieving economies of scale.

A comprehensive list of recommended improvements and phasing plan is included in the Proposed Capital Improvements section of this plan (page 18).

WATER

The City of Spring Park owns and maintains a public water distribution system that includes nearly 35,000 feet (6.6 miles) of pipe, 73 hydrants and 123 gate valves (Figure 8). The majority of the existing water main system was installed in the 1960's. Approximately 79% of the system is the original pipe material and 16% of the system was installed between 2000 and 2012.

Water Main

The water main condition assessment was based on the actual age of the existing infrastructure versus the expected life span and the number and location of documented pipe breaks. Approximately 75% of the existing watermain is Cast Iron Pipe (CIP) that was installed in 1964 (53 years old). CIP has an average life span of 50-65 years which is largely dependent on soil conditions, pipe bedding materials, pipe depth/exposure to freeze-thaw action, and general maintenance of the system.

Hydrants

The City currently owns and operates 73 hydrants. In the fall of 2016, the City completed routine maintenance by flushing the hydrants and identified 17 that do not drain properly. These hydrants were replaced in 2017 but the hydrant valves were not replaced and will need to be replaced with future projects.

In addition to the condition of the system, hydrant coverage was analyzed to determine additional areas for improvement to the system. Hydrant spacing (the distance between hydrants) requirements are based on the actual equipment used by the local fire protection agency. The National Fire Protection Agency recommends a maximum distance between hydrants of 800 feet. Industry design standards recommend a maximum distance of 500 feet between hydrants to provide adequate coverage from multiple hydrants. Figure 9 shows the system coverage of a 500 foot diameter on the existing system hydrants. There are several potential gaps in fire protection coverage including:

- Marina Shopping Center
- 50% Minnetonka Drive-In
- 4580-4560 West Arm Road
- 50% of Lord Fletcher's Apartments
- 4372-4344 West Arm Road
- Blue Lagoon Marine
- 40% of Tonka Ventures Buildings
- 20% of Bayview Apartments
- 60% of Edgewater Apartments
- 70% of Lord Fletcher's Restaurant

As future improvements are made to the water system, hydrants should be added to provide redundancy in fire protection coverage for the community.

Water System Pressure

The City has received complaints regarding low water pressure in several areas on the east side of the system. Each of the low pressure areas is associated with connections to dead-end water mains,

which has a tendency to reduce available pressure. The six low pressure areas are identified below and shown on Figure 10.

1. Dead-end Hydrant #1 – West end of Budd Lane
2. Dead-end Hydrant #2 – 3818 Sunset Drive (Utility Easement)
3. Dead-end Hydrant #6 – East end of Togo Road
4. Dead-end Hydrant #9 – East end of Mapleton Avenue
5. Dead-end Hydrant #14 – South end of Lilac Road
6. Dead-end Hydrant #19 – East end of Del Otero Ave

As improvements are made to the water system, dead-end segments of pipe should be extended and connected to other segments of the water system to provide loops. This will not only increase the water pressure available at the dead-end location identified but will also provide redundancy to the system.

Water Main Breaks

Spring Park Public Works Staff has maintained a comprehensive record of watermain system breaks since 1983. The City has recorded 52 water main breaks with 23% happening along Shoreline Drive (CSAH-15) and 29% happening along Sunset Drive (CSAH-51). A high frequency of pipe breaks in close proximity is a good indication of deteriorated pipe. A summary of the documented water main breaks can be found in appendix Table 4 and on Figure 11.

Proposed Capital Improvements

There are three primary areas of concern within the water distribution system:

1. Sunset Drive Area (primarily the watermain along Sunset Drive and the water pressure issues).
2. Shoreline Drive East/Interlachen Road (includes Shoreline Drive between Black Lake Road and Sunset Drive and Interlachen Road south of Shoreline Drive).
3. Lafayette Lane

There are segments of watermain outside of the three high priority areas that are in poor condition but the immediate needs should be focused on the areas identified above.

In addition to the City's proposed improvements, Hennepin County currently has a mill and overlay project planned on the following segments of their system in 2019:

- CSAH 15 (Shoreline Drive) from Black Lake Road to the East City Limits
- CSAH 125 (Interlachen Road) from Shoreline Drive to the South City Limits
- CSAH 51 (Sunset Drive) from Shoreline Drive to CSAH 19 (Shadywood Road)

The City should plan to coordinate utility and street improvements in conjunction with the County projects, if possible. This coordinated effort will help to reduce the overall costs for both parties by achieving economies of scale.

A comprehensive list of recommended improvements and phasing plan is included in the Proposed Capital Improvements section of this plan (page 18).

STORM

The City of Spring Park owns and maintains a public storm sewer collection system that includes 28 drainage areas, 26 manholes, 43 catch basins, 56 flared-end sections, 6 Best Management Practices (BMPs), 1 Overflow Control Structure (OCS), and 8,700 feet of storm sewer (Figure 12). This excludes 8 manholes, 72 catch basins, and 13 flared-end sections located on Shoreline Drive (CSAH-15), Sunset Drive (CSAH-51), and Interlachen Road (CSAH-125).

The majority of the system system was installed in the 1960's. 44% of the original sanitary sewer system is still in place today. The existing storm piping includes the following pipe materials:

- RCP – Reinforced Concrete Pipe
- CMP – Corrugated Metal Pipe
- HDPE – Corrugated High-Density Polyethylene
- PVC – Polyvinyl Chloride

No CCTV was available to perform a storm pipe condition assessment. The pipe section between 2 structures was assumed to have a similar PACP rating to the adjacent structures. A summary of the storm sewer pipe inventory is shown in Appendix Table 5 and Figure 12.

Storm Structures

The storm structure condition assessment was completed August 2016. Each storm manhole, catch basin, and flared-end structure was visually observed and evaluated by field personnel. Each structure was assessed using NASSCO's PACP as a guideline. Structures are graded on a scale of 1 to 5 with a 1 indicating that the structure is in good condition (i.e. minor defects) and 5 indicating severe structural defects that are a likely pre-cursor to structure failure. The conditions analyzed include Infiltration and Inflow (I&I), Grout, Adjustment Rings, Casting Corrosion, Broken/Depressed Pavement, and Exposed Aggregate:

I&I – A condition where clean water (ground water, surface storm water, sump pump discharge, etc.) enters the system through a defect in the structure.

Grout – Grout is a cementitious material often used to seal gaps in pipe connections and between casting rings. Severe grout deterioration may allow I/I to enter the system and lead to more serious structural deficiencies.

Adjustment Rings – Adjustment rings are often placed between the top of the sanitary manhole structure and the steel casting to set the casting at the appropriate height to match the street surface. Typical adjustment ring deterioration includes exposed steel rebar or broken rings which can allow I/I to enter the system and may lead to more serious structural deficiencies.

Casting Corrosion – Steel manhole castings can experience pitting or flaking of the metal surface. This can weaken the casting by making the steel section thinner.

Broken/Depressed Pavement – Broken or depressed pavement adjacent to storm manhole castings can be an indication of structural deficiencies within the manhole structure. Holes in the adjustment rings or structure joints can allow sediment into the structure, creating voids around the exterior of the structure and eventually leading to depressions at the surface.

Exposed Aggregate – Microbial Induced Corrosion (MIC) occurs when sulfuric acid reacts with the properties of cement to diminish the integrity of concrete manhole structures.

The results of the storm sewer structure condition assessment are outlined in Appendix Table 6 and Figure 13. Approximately 76% of the storm sewer structures were rated a 1 or 2, displaying minor defects. Another 12% of the storm structures were graded a 3, indicating moderate defects including Inflow/Infiltration (I&I), mild grout deterioration at adjustment rings or pipe penetrations, minor rooting, mild corrosion on casting, or mild pavement deterioration around casting. The remaining 10% of structures (19 structures total) received grades of 4-5, indicating severe defects in the structure.

Proposed Capital Improvements

The City storm sewer is generally in good condition, with a majority of the poor structures located on County facilities (Shoreline Drive, Interlachen Road and Sunset Drive). Since those structures are owned and maintained by Hennepin County, the City is not responsible for rehabilitation or replacement of those structures.

The City should plan to review storm sewer on a segment by segment basis as the City upgrades the existing streets. The storm sewer plays a critical role in providing street drainage which prolongs the life expectancy of the adjacent street. The decision to install an urban street section (curb and gutter with a complete storm sewer drainage system) versus a rural section (drainage ditches and culverts) should be reviewed and decided on a project by project basis.

A comprehensive list of recommended improvements and phasing plan is included in the Proposed Capital Improvements section of this plan (page 18).

PROPOSED CAPITAL IMPROVEMENTS

A recommended phasing plan for infrastructure replacement was developed based on the condition assessments of the individual infrastructure groups and replacement cost estimates. The plan prioritizes replacing infrastructure in the areas that are in the worst condition and/or assume a higher level of physical or financial risk if a failure were to result. Based on the individual condition assessments, the phasing plan was largely directed by the needs of the sanitary sewer system, the water distribution system and coordination with the upcoming Hennepin County roadway improvement projects.

The proposed improvements were broken out into 8 separate projects as shown below, in Figure 14 and Appendix Table 7.

Proposed Project	Priority	Estimated Project Cost
Shoreline Drive East Utility Improvements	1/3	\$1,845,944
Shoreline Drive East ADA Improvements	1/3	\$400,000
West Arm Road West Improvements	2	\$1,016,464
Sunset Drive Area Improvements	1	\$3,699,858
Black Lake Area Improvements	3	\$1,189,117
West Arm Road Central/Warren Ave Area Improvements	4	\$1,205,117
Southwest Area Improvements	5	\$1,154,477
Shoreline Drive West Improvements	6	\$1,506,727
		\$12,017,703

The Shoreline Drive East Utility Improvements should be constructed in the summer of 2018, in preparation of the Hennepin County mill and overlay project scheduled for the summer of 2019. The Shoreline Drive ADA Improvements should be constructed in the spring of 2019, in conjunction with the mill and overlay project. The Sunset Drive Improvements should be constructed one year prior to the proposed Hennepin County improvements project on Sunset Drive. The County currently has a mill and overlay planned for 2019 but we have requested that they County consider a full reconstruction of Sunset Drive, which would likely push the project out to 2022-2024 range.

In an effort to receive the most favorable bids, the recommended project schedule for individual projects is as follows (using the Shoreline Drive East Utility Improvements as an example):

- Preliminary Engineering Report (complete Fall 2017)
- Design and Construction Documents (Winter 2017/2018)
- Bid Project (March-April 2018)
- Construct (Summer 2018)



LAKE MINNETONKA
HARRISONS BAY

CITY OF MOUND
CITY OF SPRING PARK

CITY OF ORONO
CITY OF SPRING PARK

LAKE MINNETONKA
(WEST ARM)

CITY OF ORONO

CITY OF SPRING PARK
CITY OF ORONO

SETON LAKE

BLACK LAKE

LAKE MINNETONKA
SPRING PARK BAY

CITY OF SPRING PARK
CITY OF SHOREWOOD

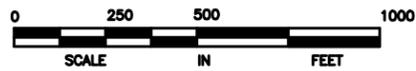
LEGEND

- █ BITUMINOUS ROAD
- █ PRIVATE ROAD
- █ COUNTY ROAD
- █ SIDEWALK

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Client: **SP CITY OF SPRING PARK**
 4349 Warren Ave.
 Spring Park, MN 55384-9711
 (952) 471-9051

Project Name: **ASSET MANAGEMENT PLAN**

Date: **10/13/17**

Sheet Title: **STREET SYSTEM MAP**

Sheet: **FIGURE-1**



LAKE MINNETONKA
HARRISONS BAY

CITY OF MOUND
CITY OF SPRING PARK

CITY OF ORONO
CITY OF SPRING PARK

LAKE MINNETONKA
(WEST ARM)

SETON LAKE

BLACK LAKE

LAKE MINNETONKA
SPRING PARK BAY

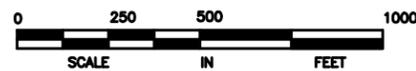
CITY OF SPRING PARK
CITY OF MOUND

CITY OF SPRING PARK
CITY OF SHOREWOOD

Oct. 16 2017 10:50 am L:\PROJECTS\20531\CAD\Xrefs\08-STREET.dwg By: bhare

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LEGEND		
PCI RATING	CONDITION	TIME TO IMPROVEMENT
91 - 100	GREAT	16-20 YEARS
81 - 90	GOOD	11-15 YEARS
66 - 80	FAIR	6-10 YEARS
51 - 65	POOR	1-5 YEARS
40 - 50	VERY POOR	REHABILITATE NOW
0 - 39	FAILED	REHABILITATE NOW

Client: **SP CITY OF SPRING PARK**
4349 Warren Ave.
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(952) 471-9051

Project Name: **ASSET MANAGEMENT PLAN**

Sheet Title: **STREET PAVEMENT CONDITION**

Date: **10/13/17**

Sheet: **FIGURE-2**



LAKE MINNETONKA
HARRISONS BAY

CITY OF MOUND
CITY OF SPRING PARK

CITY OF ORONO
CITY OF SPRING PARK

LAKE MINNETONKA
(WEST ARM)

CITY OF ORONO

CITY OF SPRING PARK
CITY OF ORONO

SETON LAKE

BLACK LAKE

LAKE MINNETONKA
SPRING PARK BAY

CITY OF SPRING PARK
CITY OF MOUND

CITY OF SPRING PARK
CITY OF SHOREWOOD

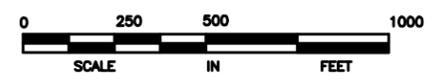
LEGEND

- CITY BOUNDARY
- SHORELINE
- SANITARY DISTRICT
- SANITARY FORCEMAIN
- SANITARY 8"
- SANITARY 10"
- SANITARY 12"
- SANITARY MANHOLES
- SANITARY LIFT STATION
- 22 SANITARY MANHOLE NUMBER
- SANITARY DIRECTION ARROWS
- UTILITY EASEMENTS

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Project Name: **ASSET MANAGEMENT PLAN**
Date: **10/13/17**
Sheet Title: **SANITARY SEWER SYSTEM MAP**
Sheet: **FIGURE-3**

Oct. 16 2017 10:52 am L:\PROJECTS\20531\CAD\Xrefs\01 - SanitarySewerMap.dwg By: bhare



LAKE MINNETONKA
HARRISONS BAY

CITY OF MOUND
CITY OF SPRING PARK

L.S. NO. 6 SERVICE AREA

L.S. NO. 5 SERVICE AREA

CITY OF ORONO
CITY OF SPRING PARK

LAKE MINNETONKA
(WEST ARM)

L.S. NO. 2 SERVICE AREA

L.S. NO. 1 SERVICE AREA

SETON LAKE

L.S. NO. 6 SERVICE AREA

BLACK LAKE

L.S. NO. 4 SERVICE AREA

L.S. NO. 6 SERVICE AREA

LAKE MINNETONKA
SPRING PARK BAY

L.S. NO. 3 SERVICE AREA

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LEGEND	
	CITY BOUNDARY
	SHORELINE
	SANITARY DISTRICT
	SANITARY FORCEMAIN
	SANITARY 8"
	SANITARY 10"
	SANITARY 12"
	SANITARY MANHOLES
	SANITARY LIFT STATION
	SANITARY MANHOLE NUMBER
	SANITARY DIRECTION ARROWS
	UTILITY EASEMENTS



Client: **SP CITY OF SPRING PARK**
4349 Warren Ave.
Spring Park, MN 55384-9711
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Project Name:	ASSET MANAGEMENT PLAN	Date:	10/13/17
Sheet Title:	SANITARY SEWER DRAINAGE AREAS	Sheet:	FIGURE-4

Oct. 16 2017 10:57 am L:\PROJECTS\20531\CAD\Xrefs\01 - SanitarySewerMap.dwg By: bhare



LAKE MINNETONKA
HARRISONS BAY

CITY OF MOUND
CITY OF SPRING PARK

CITY OF ORONO
CITY OF SPRING PARK

LAKE MINNETONKA
(WEST ARM)

CITY OF ORONO

CITY OF SPRING PARK
CITY OF ORONO

SETON LAKE

BLACK LAKE

LAKE MINNETONKA
SPRING PARK BAY

CITY OF SPRING PARK
CITY OF MOUND

CITY OF SPRING PARK
CITY OF SHOREWOOD

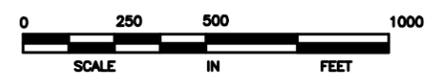
LEGEND

- CITY BOUNDARY
- ==== SHORELINE
- SANITARY DISTRICT
- SANITARY FORCEMAIN
- SANITARY 8"
- SANITARY 10"
- SANITARY 12"
- I&I (PACP 1-2)
- STRUCTURAL (PACP 1-3)
- PIPE SAG
- I&I (PACP 3-5)
- STRUCTURAL (PACP 4-5)

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Project Name: **ASSET MANAGEMENT PLAN**
 Date: **10/13/17**

Sheet Title: **SANITARY SEWER PIPE CONDITIONS**
 Sheet: **FIGURE-5**

Oct. 16 2017 11:26 am L:\PROJECTS\20531\CAD\Xrefs\01 - SanitarySewerMap.dwg By: bhare



LAKE MINNETONKA
HARRISONS BAY

CITY OF MOUND
CITY OF SPRING PARK

CITY OF ORONO
CITY OF SPRING PARK

LAKE MINNETONKA
(WEST ARM)

SETON LAKE

BLACK LAKE

LAKE MINNETONKA
SPRING PARK BAY

CITY OF SPRING PARK
CITY OF MOUND

CITY OF SPRING PARK
CITY OF SHOREWOOD

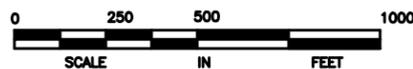
LEGEND

- CITY BOUNDARY
- ==== SHORELINE
- SANITARY DISTRICT
- SANITARY FORCEMAIN
- SANITARY 8"
- SANITARY 10"
- SANITARY 12"
- CURED-IN-PLACE PIPING (CIPP)

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Project Name: **ASSET MANAGEMENT PLAN**

Date: **10/13/17**

Sheet Title: **SANITARY SEWER CIPP LOCATIONS**

Sheet: **FIGURE-6**



LAKE MINNETONKA
HARRISONS BAY

CITY OF MOUND
CITY OF SPRING PARK

CITY OF ORONO
CITY OF SPRING PARK

LAKE MINNETONKA
(WEST ARM)

CITY OF ORONO

CITY OF SPRING PARK
CITY OF ORONO

SETON LAKE

BLACK LAKE

CITY OF SPRING PARK
CITY OF MOUND

LAKE MINNETONKA
SPRING PARK BAY

CITY OF SPRING PARK
CITY OF SHOREWOOD

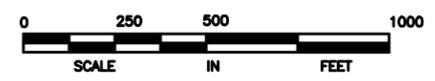
LEGEND

- CITY BOUNDARY
- SHORELINE
- SANITARY DISTRICT
- SANITARY FORCEMAIN
- SANITARY 8"
- SANITARY 10"
- SANITARY 12"
- NEW RINGS/CASTING ADJ.
- I&I REDUCTION
- REMOVE AND REPLACE MH

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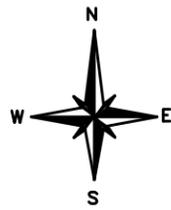
Project Name: **ASSET MANAGEMENT PLAN**

Date: **10/13/17**

Sheet Title: **SANITARY SEWER MANHOLE CONDITIONS**

Sheet: **FIGURE-7**

Oct. 16 2017 11:37 am L:\PROJECTS\20531\CAD\Xrefs\01 - SanitarySewerMap.dwg By: bhare



LAKE MINNETONKA
HARRISONS BAY

CITY OF MOUND
CITY OF SPRING PARK

CITY OF ORONO
CITY OF SPRING PARK

LAKE MINNETONKA
(WEST ARM)

NORMALLY CLOSED
INTERCONNECT
TO ORONO
SYSTEM

INTER-CONNECT
WITH MOUND
(NORMALLY
CLOSED)

SETON
LAKE

BLACK LAKE

LAKE MINNETONKA
SPRING PARK BAY

CITY OF SPRING PARK
CITY OF MOUND

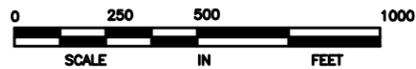
CITY OF SPRING PARK
CITY OF SHOREWOOD

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LEGEND

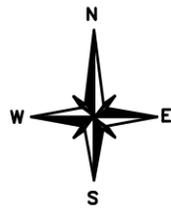
- CITY LIMITS
- SHORELINE (DNR)
- WATER MAIN 6"
- WATER MAIN 8"
- WATER MAIN 14"
- WATER SERVICE WITH STATION
- WELL
- RESERVOIR
- WATER TREATMENT
- WATER TOWER
- ⊕ HYDRANT WITH NUMBER
- ⊕ GATE VALVE WITH NUMBER



Client: **SP CITY OF SPRING PARK**
4349 Warren Ave.
Spring Park, MN 55384-9711
(952) 471-9051

Project Name: **ASSET MANAGEMENT PLAN**
Date: **10/13/17**
Sheet Title: **WATERMAIN SYSTEM MAP**
Sheet: **FIGURE-8**

Oct. 16 2017 11:45 am L:\PROJECTS\20531\CAD\Xrefs\02-WatermainMap.dwg By: bhare



LAKE MINNETONKA
HARRISONS BAY

CITY OF MOUND
CITY OF SPRING PARK

CITY OF ORONO
CITY OF SPRING PARK

LAKE MINNETONKA
(WEST ARM)

NORMALLY
CLOSED
INTERCONNECT
TO ORONO
SYSTEM

INTER-CONNECT
WITH MOUND
(NORMALLY
CLOSED)

NORMALLY
CLOSED
INTERCONNECT
TO ORONO
SYSTEM

SETON
LAKE

BLACK LAKE

LAKE MINNETONKA
SPRING PARK BAY

CITY OF SPRING PARK
CITY OF MOUND

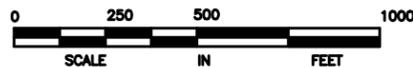
CITY OF SPRING PARK
CITY OF SHOREWOOD

LEGEND	
	CITY LIMITS
	SHORELINE (DNR)
	WATER MAIN 6"
	WATER MAIN 8"
	WATER MAIN 14"
	WELL
	RESERVOIR
	WATER TREATMENT
	HYDRANT WITH NUMBER
	GATE VALVE WITH NUMBER
	500' DIAMETER COVERAGE AREA
	BLDG LACKING HYDRANT COVERAGE

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Client:



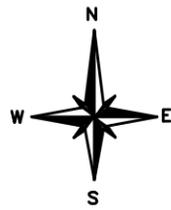
Project Name: **ASSET MANAGEMENT PLAN**

Date: **10/13/17**

Sheet Title: **HYDRANT COVERAGE MAP**

Sheet: **FIGURE-9**

Oct. 16 2017 11:46 am L:\PROJECTS\20531\CAD\Xrefs\02-Watermain_Coverage_Map.dwg By: bhare



LAKE MINNETONKA
HARRISONS BAY

CITY OF MOUND
CITY OF SPRING PARK

CITY OF ORONO
CITY OF SPRING PARK

LAKE MINNETONKA
(WEST ARM)

NORMALLY CLOSED
INTERCONNECT
TO ORONO
SYSTEM

INTER-CONNECT
WITH MOUND
(NORMALLY
CLOSED)

NORMALLY CLOSED
INTERCONNECT
TO ORONO
SYSTEM

SETON
LAKE

BLACK LAKE

LAKE MINNETONKA
SPRING PARK BAY

CITY OF SPRING PARK
CITY OF MOUND

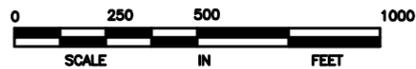
CITY OF SPRING PARK
CITY OF SHOREWOOD

LEGEND	
	CITY LIMITS
	SHORELINE (DNR)
	WATER MAIN 6"
	WATER MAIN 8"
	WATER MAIN 14"
	WATER SERVICE WITH STATION
	WELL
	RESERVOIR
	WATER TREATMENT
	WATER TOWER
	HYDRANT WITH NUMBER
	GATE VALVE WITH NUMBER
	LOW PRESSURE AREA

NOTICE

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Client: **CITY OF SPRING PARK**
4349 Warren Ave.
Spring Park, MN 55384-9711
(952) 471-9051

Project Name: **ASSET MANAGEMENT PLAN** Date: **10/13/17**

Sheet Title: **WATERMAIN LOW PRESSURE MAP** Sheet: **FIGURE-10**

Oct. 16 2017 11:48 am L:\PROJECTS\20531\CAD\Xrefs\02-WatermainMap.dwg By: bhare



LAKE MINNETONKA
HARRISONS BAY

CITY OF MOUND
CITY OF SPRING PARK

CITY OF ORONO
CITY OF SPRING PARK

LAKE MINNETONKA
(WEST ARM)

CITY OF ORONO

CITY OF SPRING PARK
CITY OF ORONO

INTER-CONNECT WITH MOUND (NORMALLY CLOSED)

NORMALLY CLOSED INTERCONNECT TO ORONO SYSTEM

NORMALLY CLOSED INTERCONNECT TO ORONO SYSTEM

SETON LAKE

BLACK LAKE

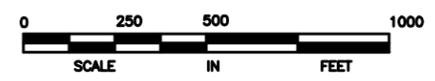
LAKE MINNETONKA
SPRING PARK BAY

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LEGEND

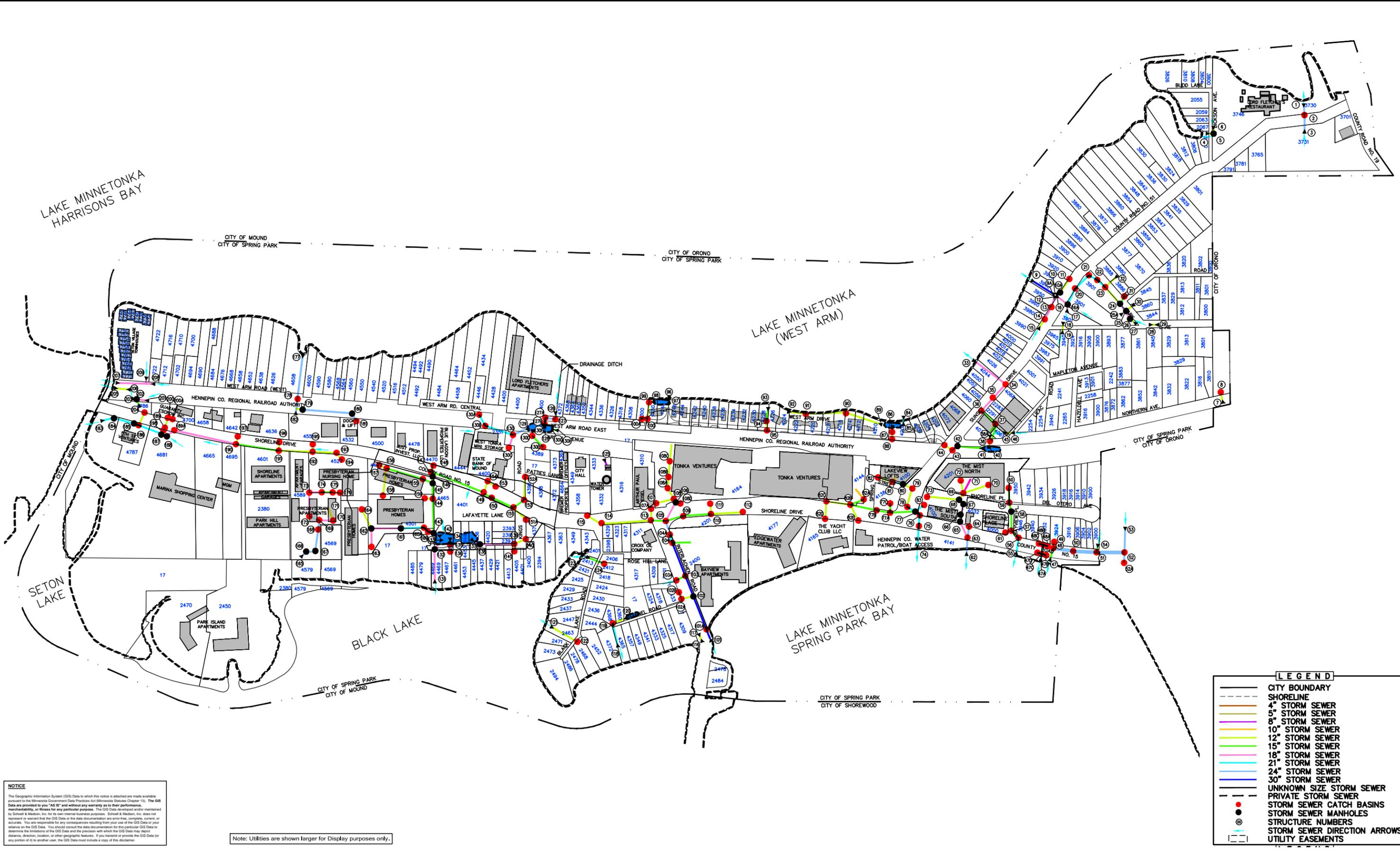
- CITY LIMITS
- - - SHORELINE (DNR)
- WATER MAIN 6"
- WATER MAIN 8"
- WATER MAIN 14"
- WATER TOWER
- ⊕ HYDRANT WITH NUMBER
- ⊕ GATE VALVE WITH NUMBER
- LOW PRIORITY (1 BRK/BLOCK)
- MED. PRIORITY (2-3 BRK/BLOCK)
- HIGH PRIORITY (4-5 BRK/BLOCK)



Client: **SP CITY OF SPRING PARK**
4349 Warren Ave.
Spring Park, MN 55384-9711
(952) 471-9051

Project Name: **ASSET MANAGEMENT PLAN**
Date: **10/13/17**
Sheet Title: **WATERMAIN BREAK LOCATION MAP**
Sheet: **FIGURE-11**

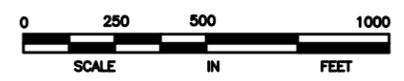
Oct. 16 2017 11:50 am L:\PROJECTS\20531\CAD\Xrefs\02-WatermainMap.dwg By: bhare



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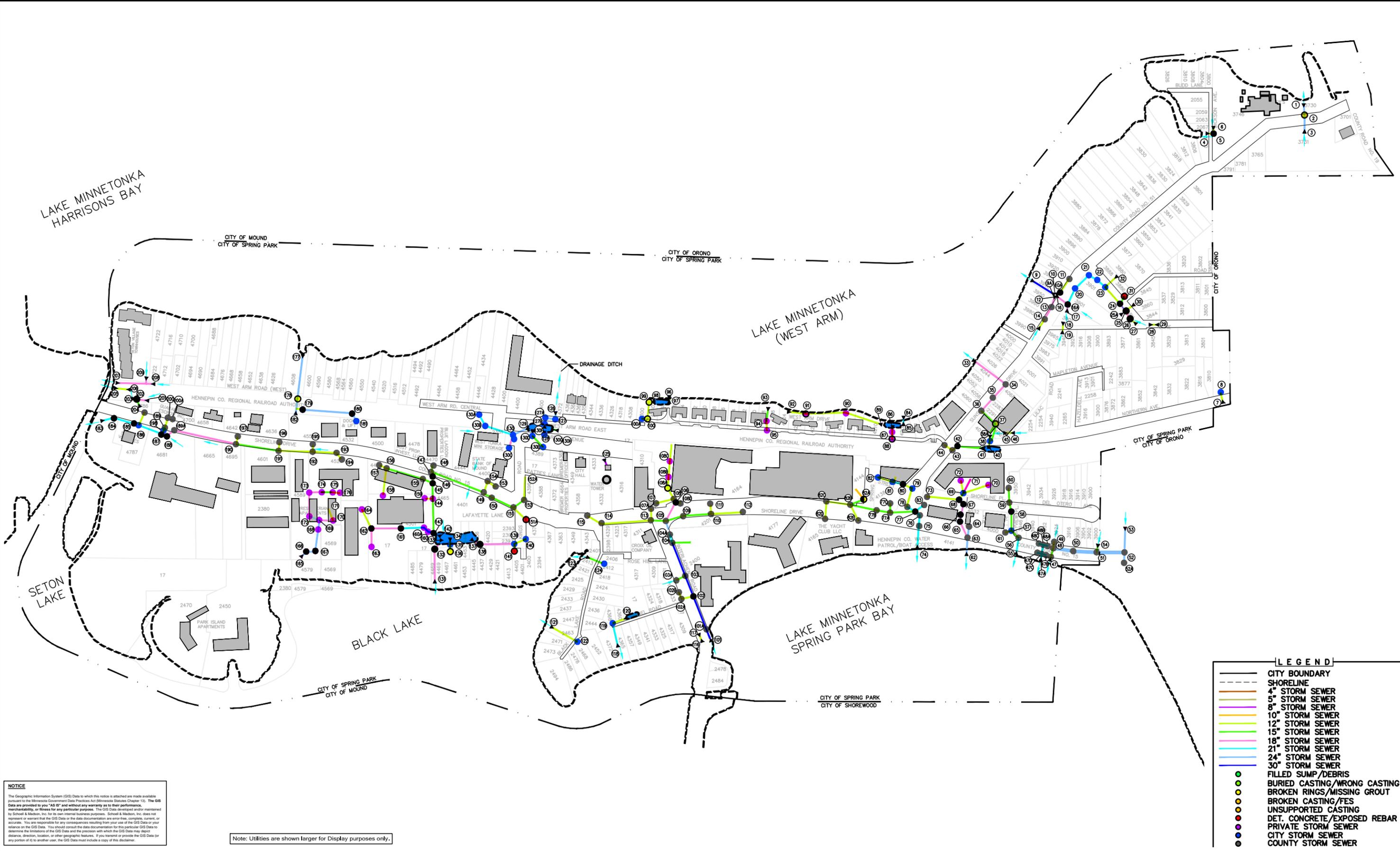
Note: Utilities are shown larger for Display purposes only.

LEGEND	
	CITY BOUNDARY
	SHORELINE
	4" STORM SEWER
	5" STORM SEWER
	8" STORM SEWER
	10" STORM SEWER
	12" STORM SEWER
	15" STORM SEWER
	18" STORM SEWER
	21" STORM SEWER
	24" STORM SEWER
	30" STORM SEWER
	UNKNOWN SIZE STORM SEWER
	PRIVATE STORM SEWER
	STORM SEWER CATCH BASINS
	STORM SEWER MANHOLES
	STRUCTURE NUMBERS
	STORM SEWER DIRECTION ARROWS
	UTILITY EASEMENTS



Client: **SP CITY OF SPRING PARK**
 4349 Warren Ave.
 Spring Park, MN 55384-9711
 (952) 471-9051

Project Name:	ASSET MANAGEMENT PLAN	Date:	10/13/17
Sheet Title:	STORM SEWER SYSTEM MAP	Sheet:	FIGURE-12

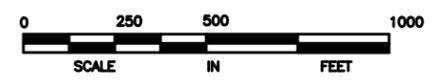


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LEGEND	
	CITY BOUNDARY
	SHORELINE
	4" STORM SEWER
	5" STORM SEWER
	8" STORM SEWER
	10" STORM SEWER
	12" STORM SEWER
	15" STORM SEWER
	18" STORM SEWER
	21" STORM SEWER
	24" STORM SEWER
	30" STORM SEWER
	FILLED SUMP/DEBRIS
	BURIED CASTING/WRONG CASTING
	BROKEN RINGS/MISSING GROUT
	BROKEN CASTING/FES
	UNSUPPORTED CASTING
	DET. CONCRETE/EXPOSED REBAR
	PRIVATE STORM SEWER
	CITY STORM SEWER
	COUNTY STORM SEWER



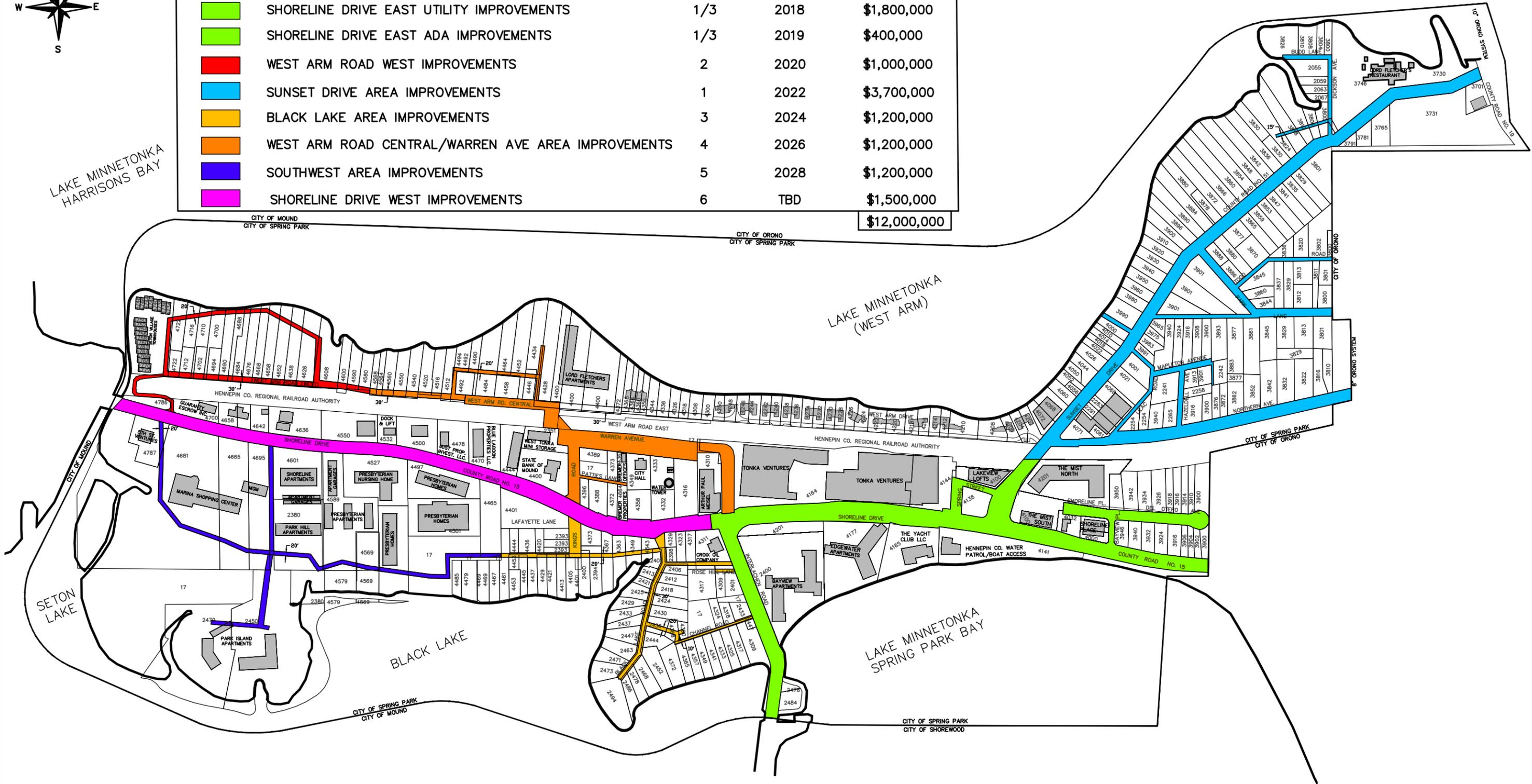
Client: CITY OF SPRING PARK
 4349 Warren Ave.
 Spring Park, MN 55384-9711
 (952) 471-9051

Project Name:	ASSET MANAGEMENT PLAN	Date:	10/13/17
Sheet Title:	STORM STRUCTURE CONDITIONS	Sheet:	FIGURE-13



LEGEND

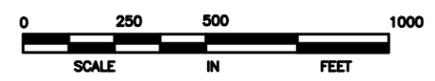
PROJECT AREA	PROJECT NAME	PRIORITY	PROPOSED IMPROVEMENT	ESTIMATED COST
	SHORELINE DRIVE EAST UTILITY IMPROVEMENTS	1/3	2018	\$1,800,000
	SHORELINE DRIVE EAST ADA IMPROVEMENTS	1/3	2019	\$400,000
	WEST ARM ROAD WEST IMPROVEMENTS	2	2020	\$1,000,000
	SUNSET DRIVE AREA IMPROVEMENTS	1	2022	\$3,700,000
	BLACK LAKE AREA IMPROVEMENTS	3	2024	\$1,200,000
	WEST ARM ROAD CENTRAL/WARREN AVE AREA IMPROVEMENTS	4	2026	\$1,200,000
	SOUTHWEST AREA IMPROVEMENTS	5	2028	\$1,200,000
	SHORELINE DRIVE WEST IMPROVEMENTS	6	TBD	\$1,500,000
				\$12,000,000



Oct. 16 2017 02:44 pm L:\PROJECTS\20531\CAD\Refs\00-PriorityMap.dwg By: bhare

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Client: **SP CITY OF SPRING PARK**
 4349 Warren Ave.
 Spring Park, MN 55384-9711
 (952) 471-9051

Project Name:	ASSET MANAGEMENT PLAN	Date:	10/13/17
Sheet Title:	PROJECT PRIORITY MAP	Sheet:	FIGURE 14

Table 1: Street Condition Summary
Asset Management Plan
City of Spring Park
 October 13, 2017
 Sambatek # 20531

Street	Segment	Length (Feet)	Existing Bituminous Width (Feet)	New Street Width (B-B of Curb) (Feet)	New Bit. Width (Feet)	New Bit. (Sq. Yards)	Sidewalk Length (Feet)	Street Light Decorative (Poles)	Street Light Utility Pole (Poles)	Street Light Installation Year	Timber Ret. Wall (2' Height)	Timber Ret. Wall (3' Height)	Timber Ret. Wall (4'+ Height)	Rock Ret. Wall	Block Ret. Wall	Pavement			
																Condition Rating (2014) 100 = Best 0 = Worst	Priority for Repair (2014)	Estimated Time to Improvement (Years)	Last Overlay or Year Constructed
Bayview Place	Shoreline to Del Otero	149	25	26	22	364	120	0	0	-						92	19	16-20	2006
Black Lake Road	Shoreline to End	800	17	21	17	1,511	0	0	2	-						54	4	1-5	1993
Budd Lane	Dickenson to End	157	10.5	21	17	297	0	0	0	-						78	16	6-10	1968
Channel Road	Interlachen to End	455	18.5	21	17	859	0	0	1	-						100	20	16-20	2009
Del Otero Avenue	East End to Bayview	510	24	25	21	1,190	0	0	3	-						59	7	1-5	1968
Dickson Avenue	Sunset to Budd	410	15	21	17	774	0	0	1	-						55	5	1-5	1968
Dickson Avenue Ext.	Sunset to End	184	15	21	17	348	0	0	0	-						65	11	1-5	2014
Hazeldell Ave.	Northern to Mapleton	321	16	21	17	606	0	0	0	-						62	9	1-5	1968
Interlachen	Shoreline to East End Warren Concrete	326	28	29	25	906	0	0	4	-						56	6	1-5	1968
Interlachen (CSAH-125)																			
Island Dr	Shoreline to Park Island Apartments						0	0	0	-									
Kings Road North	Shoreline to Warren	321	26	27	23	820	0	0	0	-						65	11	1-5	1970
Kings Road South	Shoreline to Lafayette	190	20	21	17	359	0	0	1	-						87	18	11-15	1992
Lafayette Lane	Kings South to End	527	16	21	17	995	0	0	1	-						84	17	11-15	1992
Lilac Road	Northern to Mapleton	404	16	21	17	763	0	0	0	-						67	12	6-10	1968
Mapleton Avenue	East End to Sunset	487	16	21	17	920	0	0	2	-				60		50	2	1-5	1968
Northern Ave	Sunset to Corporate Limits	1,615	23 - 24	25	21	3,768	0	0	2	-						44	1	Rehab Now	1968
Park Lane	Sunset to East End	824	20	21	17	1,556	0	0	2	-						52	3	1-5	1968
Patties Lane	Kings North to East City Hall Lot	278	12	21	17	525	0	0	1	-						63	10	1-5	1970
Rose Hill Lane	Interlachen to End	117	15	21	17	221	0	1	0	-						77	15	6-10	1968
Shoreline Place	West End to Bayview	251	24	25	21	586	324	8	0	-						59	7	1-5	1968
Shoreline Dr	West Border to Interlachen			CSAH 15															
Shoreline Dr	Interlachen to East Border			CSAH 15			11,153	47	0	2014	1,220	355	350	150					
Sunset Dr	Shoreline Drive to Shadywood			CSAH 51			889	13	17	-				170					
Spring Street	Sunset to Shoreline	449	15	21	17	848	0	4	0	-						74	14	6-10	2005 (E&W)
Togo Road	Park to Corporate Limits	553	18 - 25	26	22	1,352	0	0	2	-						67	12	6-10	1968
West Arm Central	Kings to West R/W	483	13	21	17	912	0	0	2	-						62	9	1-5	1970
West Arm Road East	Kings to East End	872	16	21	17	1,647	0	6	0	-				550		100*	20*	16-20	2015
West Arm Road West	Shoreline to End	1,348	18	21	17	2,546	0	0	2	-			40	50		60	8	1-5	1970
Warren Avenue	Kings Rd N to Interlachen E End Conc Dr	780	24.5	26	22	1,907	0	0	3	-						68	13	6-10	1994
Totals		12,811				26,582	12,486	79	46		1,220	355	350	360	660				

* West Arm Road East was reconstructed in 2015 so PCI Rating information was updated to reflect that project.
 ** Includes 10% Contingency. Excludes Professional Services. Based on 2015 Construction costs. Add 3% per year for inflation. Cost based on \$125/Sq. Yd. of new Bituminous Surface.

Table 2: Sanitary Sewer Pipe Condition Summary
Asset Management Plan
City of Spring Park
 October 13, 2017
 Sambatek # 20531

Structure	Structure	Street	Gravity Length [ft]	Gravity Pipe Material	Gravity Diameter [in]	CIPP Lined	CIPP Short Liner	Last Year of Improvement	CCTV Date	I&I	Cracked Pipe	Joint Defects	Sag Condition	Service Defects	Mineral Deposits	Debris Roots Grease	Pipe Condition Average	Pipe Condition Total	FM Length [ft]	FM Pipe Material	FM Diameter [in]	G.W. Ele Above/Below 930'	Surface	General Note											
From	To									Condition Assessment is graded on a scale of 1 to 5 (1 is good, 5 is poor)																	Sum								
MH-57	MH-56	Interlachen Road (S)	167	VCP	8	No	No	1964	2004	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.00	7.0				Above	Bit	None											
MH-58	MH-57	Interlachen Road (S)	231	VCP	8	No	No	1964	2004	1.0	1.0	2.5	1.0	1.0	3.0	1.0	1.50	10.5				Above	Bit												
MH-59	MH-38	Rosehill Lane	373	VCP	10	Yes	No	2016	2004	1.0	5.0	3.0	1.0	2.5	4.0	2.5	2.71	19.0						Debris, Soil Exposed											
MH-60	MH-36	Shoreline Drive	262	VCP	8	No	No	1966	2004	2.0	2.5	1.5	1.0	3.5	3.0	1.0	2.07	14.5																	
MH-60A	MH-60	Shoreline Drive	140	PVC	8	No	No	2012	2004	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.00	7.0						None											
MH-60B	MH-60A	Shoreline Drive	167	PVC	8			2012																											
MH-60C	MH-60B	Shoreline Drive	95	PVC	8			2012																											
MH-61	MH-56	Interlachen Road (S)	138	VCP	8	No	No	1964	2004	1.0	1.0	1.0	1.0	1.0	2.5	1.0	1.21	8.5				Below	Bit												
MH-63	MH-63A	Shoreline Drive	311	VCP	8	No	No	1966	2002	2.5	1.0	1.0	1.0	1.0	2.5	3.7	1.81	12.7				Above	Bit												
MH-63A	LS-3	Sunset Drive	53	VCP	8	No	No	2005	2002							4.0	0.57	4.0				Above	Bit												
MH-66	MH-63	Bayview Place	196	VCP	8	No	No	1964	2002	1.0	1.0	1.0	1.0	1.0	1.5	1.5	1.14	8.0				Above	Bit	Jet/Vac											
MH-67	MH-66	DelOtero Avenue East	223	VCP	8	No	No	1964	2002	2.5	1.0	1.0	1.0	1.0	3.0	1.5	1.57	11.0				Above	Bit												
MH-67A	MH-67	DelOtero Avenue East	239	VCP	8	No	No	1964	2002	2.0	2.0	1.0	1.0	1.0	2.0	1.0	1.43	10.0				Above	Bit												
MH-68	MH-66	DelOtero Avenue East	76	VCP	8	No	Yes	2005	2002	2.5	1.0	2.0	1.0	2.0	3.0	1.0	1.79	12.5				Below	Bit												
MH-69	MH-70	Sunset Drive	218	VCP	8	Yes		2017	2012	3.0	1.0	2.0	1.0	1.0	2.0	1.0	1.57	11.0				Above	Bit												
MH-69	LS-2	Sunset Drive	63	VCP	8	Yes		2017	2012	1.0	1.0	1.0	2.5	1.0	3.0	5.0	2.07	14.5						Jet/Vac											
MH-70	MH-71	Sunset Drive	349	VCP	8	Yes		2017	2012	4.0	1.0	2.0	1.0	3.0	2.0	1.0	2.00	14.0				Above	Bit												
MH-71	MH-72	Sunset Drive	344	VCP	8	No	No	1964	2012	1.0	1.0	1.0	1.0	2.5	1.5	1.0	1.29	9.0				Below	Bit												
MH-72B	MH-72A	Sunset Drive	68	VCP	8	No	No		2012	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.00	7.0																	
MH-72A	MH-72	Sunset Drive	72	VCP	8	No	No		2012	1.0	1.0	1.5	1.0	1.0	3.0	1.5	1.43	10.0																	
MH-72B	MH-78	Sunset Drive	405	PVC	8	No	No		2012	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.00	7.0																	
MH-73	MH-69	Sunset Drive	335	VCP	8	No	No	1964	2012	2.0	1.0	1.0	1.0	1.0	2.5	3.0	1.64	11.5					Bit	Jet/Vac											
MH-74A	MH-73	Sunset Drive	83	VCP	8	No	No	1964	2012	1.5	1.0	1.0	1.0	1.0	3.0	3.0	1.64	11.5				Above	Bit	Jet/Vac											
MH-74B	MH-74A	Sunset Drive	124	VCP	8	No	No	1964	2012	2.0	1.0	1.0	1.0	1.5	3.5	4.0	2.00	14.0				Above	Bit	Jet/Vac											
MH-75	MH-74B	Sunset Drive	197	VCP	8	No	No	1964	2012	1.0	1.5	1.0	1.0	1.3	3.0	4.0	1.82	12.8				Below	Bit	Jet/Vac											
MH-76	MH-75	Sunset Drive	301	VCP	8	No	No	1964	2012	3.0	1.0	1.0	1.0	1.0	5.0	5.0	2.43	17.0					Bit	Jet/Vac											
MH-77	MH-76	Sunset Drive	209	VCP	8	No	No	1964	2012	1.0	1.0	1.0	1.0	1.3	5.0	5.0	2.18	15.3					Bit	Jet/Vac											
MH-79	MH-72	Northern Avenue	367	VCP	8	No	No	1964	2012	2.0	1.0	2.0	1.5	1.0	2.0	1.0	1.50	10.5				Below	Bit												
MH-80	MH-79	Northern Avenue	372	VCP	8	No	No	1964	2012	1.0	1.0	1.0	1.0	1.0	1.0	5.0	1.57	11.0					Bit	R. Removal											
MH-81	MH-80	Northern Avenue	291	VCP	8	No	No	1964	2012	1.0	1.0	2.0	1.0	3.0	1.0	5.0	2.00	14.0					Bit	R. Removal											
MH-82	MH-81	Northern Avenue	259	VCP	8	No	No	1964	2012	1.0	1.0	3.0	2.5	2.0	1.0	2.5	1.86	13.0					Bit												
MH-83	MH-82	Northern Avenue	285	VCP	8	No	No	1964	2012	1.0	1.0	3.0	2.0	3.0	5.0	4.0	2.71	19.0					Bit	R. Removal											
MH-84	MH-70	Mapleton Avenue	189	VCP	8	No	No	1964	2012	1.0	1.0	1.5	1.0	1.0	3.5	1.5	1.50	10.5					Bit	Chain											
MH-85	MH-84	Mapleton Avenue	33	VCP	8	No	No	1964	2012	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.00	7.0					Bit	Jet/Vac											
MH-86	MH-85	Lilac Road	87	VCP	8	No	No	1964	2012	1.0	1.3	1.0	1.0	1.0	1.0	1.1	1.05	7.4					Bit	None											
MH-87	MH-86	Lilac Road	202	VCP	8	No	No	1964	2012	1.0	1.0	1.0	1.0	2.0	1.5	2.5	1.43	10.0					Bit	Jet/Vac											
MH-88	MH-85	Mapleton Avenue	159	VCP	8	Yes	No	2016	2012	1.0	1.5	2.0	1.0	1.5	1.0	3.5	1.64	11.5					Bit	R. Removal											
MH-89	MH-88	Mapleton Avenue	160	VCP	8	No	No	1964	2012	1.0	1.0	1.0	1.0	1.0	1.0	2.0	1.14	8.0					Bit												
MH-91	MH-88	Hazeldell Ave.	114	VCP	8	No	No	1964	2012	1.0	1.3	1.0	1.0	1.0	1.0	1.5	1.11	7.8					Bit												
MH-92	MH-74A	Park Lane	276	VCP	8	No	No	1964	2012	4.0	1.0	2.5	1.0	3.0	3.5	1.0	2.29	16.0				Below	Bit												
MH-93	MH-92	Park Lane	175	VCP	8	No	No	1964	2012	2.0	1.0	2.0	1.0	2.0	4.0	1.0	1.71	12.0				Below	Bit	Chain											
MH-94	MH-93	Park Lane	369	VCP	8	No	No	1964	2012	2.0	1.0	2.0	1.0	4.0	4.0	2.0	2.29	16.0				Above	Bit	Chain											
MH-95	MH-92	Togo Road	229	VCP	8	No	No	1964	2012	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.00	7.0				Above	Bit												
MH-96	MH-95	Togo Road	272	VCP	8	Yes	Yes	2016	2012	1.0	1.0	1.0	1.0	5.0	3.0	5.0	2.43	17.0					Bit	R. Removal											
MH-97	MH-101	Dickson Avenue	158	VCP	8	No	Yes	2008	2012	1.3	1.0	2.0	1.0	3.0	2.5	3.0	1.96	13.8					Turf	Jet/Vac											
MH-98	MH-97	Sunset Drive	331	VCP	8	Yes	Yes	2017	2012	2.5	1.0	3.5	1.5	1.0	4.0	5.0	2.64	18.5				Above	Bit	Jet/Vac											
MH-99	MH-98	Sunset Drive	308	VCP	8	No	Yes	1966	2012	1.3	1.0	4.0	2.5	1.0	4.0	1.0	2.11	14.8				Above	Bit												
MH-100	MH-99	Sunset Drive	212	VCP	8	No	Yes	1966	2012	1.5	1.0	1.5	1.0	4.5	5.0	1.0	2.21	15.5				Above	Bit												
MH-100	MH-72	West Arm Drive Dr	77	PVC	8			1996														Above	Bit												
MH-101	MH-100	West Arm Drive Dr	65	PVC	8			1996														Below	Bit												
MH-102	MH-101	Dickson Avenue	277	VCP	8	No	No	2008	2012	1.0	1.0	2.5	1.5	1.5	3.0	3.5	2.00	14.0				Above	Bit												
MH-102	MH-101	West Arm Drive Dr	382	PVC	8			1996															Bit												
MH-103	MH-102	Budd Lane	210	VCP	8	No	No	1996	2012	1.0	1.0	1.0	1.0	1.0	5.0	5.0	2.14	15.0				Above	Bit												
MH-103	MH-102	West Arm Drive Dr	378	PVC	8			1996															Bit												
MH-104	MH-101	Dickson Avenue Easement	296	VCP	8	No	Yes	1966	2012	1.0	1.0	2.0	1.0	1.0	1.5	1.0	1.21	8.5				Below	Turf												
MH-104	MH-103	West Arm Drive Dr	267	PVC	8			1996															Bit												
MH-105	MH-104	West Arm Drive Dr	271	PVC	8			1996															Bit												
MH-105	MH-17	Shoreline Drive	263	VCP	8	No	No	1987	2004	1.0	3.0	2.0	1.0	1.0	1.0	3.0	1.71	12.0					Bit	Multiple Cracks											
MH-106	MH-107	West Arm Drive East	181	PVC	8			1996															Bit												
MH-107	MH-51	West Arm Drive East	31	PVC	8			1996															Bit												
LS-3	MH-24	Shoreline Drive - Lift Station 3						2006											487	CIP	6		Bit												
LS-2	MH-24	Sunset Drive - Lift Station 2						2010											1385	CIP	6		Bit												
Totals			28,131																2,817																

Table 3: Sanitary Sewer Structure Condition Summary
Asset Management Plan
City of Spring Park
October 13, 2017
Sambatek # 20531

Structure	Street	Inspection Date	I&I		Structure Material	Surface Type	Structure Assess.	General Note
			Depth	Elev.				
From								
LS-1	Dickson Avenue - Lift Station 1							Reconstructed in 2008
LS-2	Sunset Drive - Lift Station 2							Reconstructed in 2010
LS-3	Shoreline Drive - Lift Station 3							Reconstructed in 2005
LS-4	Black Lake Road - Lift Station 4							Reconstructed in 1990
LS-5	Warren Ave							Reconstructed in 2014
LS-6	Lafayette Lane Trunk - Lift Station 6							Reconstructed in 2005
MH-1	Lafayette Lane Easement (Cross Shoreline)	5/17/2016			Conc	Grass	2.5	Deteriorated 2' of rings
MH-1A	Lafayette Lane Easement	5/17/2016			Conc	Bit/Conc	2.0	0.5' det mud/rings, casting good, plastic steps
MH-1B	Lafayette Lane Easement	5/17/2016			Conc	Bit	1.3	Large buildup in front of 6" PVC serv, plastic steps, 0.5' rings, casting good
MH-2	Lafayette Lane Easement	5/17/2016			Conc	Bit	1.0	Casting/rings good, plastic steps
MH-2A	Lafayette Lane Easement	5/17/2016			Conc	Bit	1.5	Casting good, small missing chunk, mild det of rings and grout (3"), plastic steps
MH-3	Lafayette Lane Easement	5/17/2016			Conc	Water's Edge	1.0	Casting good, walls good, water tight MH lid
MH-4	Lafayette Lane Easement							MH Lined through - Could not locate. Note from CIPP lining from CITY.
MH-5	Lafayette Lane Easement	5/17/2016			Conc	Tall Grass	1.0	Casting rings, good
MH-5A	Lafayette Lane Easement	5/17/2016			Conc	Grass	1.0	Casting, rings, plastic steps good
MH-5B	Lafayette Lane Easement	5/17/2016			Conc	Bit	3.0	Heave/Settle/Crack bit, plastic steps, casting good, moderate grout deterioration, 2 services south
MH-6	Lafayette Lane Easement	5/17/2016			Conc	Grass	1.0	Inside E DIP drop, plastic steps, casting good
MH-7	Lafayette Lane Easement	5/17/2016			Conc	Tall Grass	1.0	Rings/Casting good, no steps, yellow watertight seal
MH-7A	Lafayette Lane Easement	5/17/2016			Conc	Woods	1.0	4" rings, casting, plastic steps good
MH-8	Lafayette Lane Easement	5/17/2016			Conc	Grass	1.0	1.5' plasic rings, casting good, no steps
MH-8A	Lafayette Lane Easement	5/17/2016			Conc	Grass	2.5	0.8' rings, good, casting/rings offset 6-8", casting good
MH-8B	Lafayette Lane Easement	5/17/2016			Conc	Grass	1.0	Casting, rings, plastic steps good, plugged/sealed/abandoned line to north
MH-8D	Lafayette Lane Easement	5/17/2016			Conc	Bit	1.3	Casting good, no steps, mud deteriorating
MH-9	Lafayette Lane Easement	5/17/2016			Conc	Grass	1.0	Casting, 1' plastic rings good, no steps
MH-10	Lafayette Lane Easement	5/17/2016			Conc	Grass	1.0	Casting good, mild corrosion, rings good, no steps.
MH-11	Lafayette Lane Easement	5/17/2016			Conc	Grass	1.0	Casting good, 0.8' rings good, no steps
MH-12	Lafayette Lane Easement	5/16/2016			Conc	Bit/Conc	1.5	Bit cracked around MH, grout det, casting good, no steps
MH-13	Lafayette Lane Easement	5/16/2016			Conc	Grass	1.0	Broken bit edge, casting good, 5 rings good, no steps
MH-14	Lafayette Lane Easement	5/16/2016			Conc	Grass	3.0	Casting, rings good, no steps, slab, I&I under slab, minor roots
MH-15	Lafayette Lane Easement	5/16/2016			Conc	Bit	1.5	Bit det around casting, det runk/mud (1.0'), raise casting
MH-16	West Arm Road (W) & Easement (E)	5/9/2016	6.00	-6.00	Conc	Brick Dwy	3.0	Roots/I&I first barrel joint, casting good, fiberglass steps
MH-16A	West Arm Road (W) & Easement (E)	5/9/2016			Conc	Bit	1.0	4" PVC Service NNE, Casting Good but Offset 3"
MH-16B	West Arm Road (W) & Easement (E)							
MH-17	Shoreline Drive	5/16/2016			Conc	Bit	1.0	Casting, ring, mud good, no steps
MH-18	Interlachen Road (S)	5/16/2016						
MH-19	Shoreline Drive	5/16/2016			Conc	Bit	3.0	Casting good, mild corrosion, mild ring/mud deteriorating, 1.2' rings
MH-20	Shoreline Drive	5/16/2016			Conc	Bit	4.0	6" chip casting, wrong lid for casting, broken rings, no steps
MH-20A	Shoreline Drive	5/16/2016			Conc	Bit	4.0	Deteriorating rings/mud, mismatched casting/cover, no steps, casting cracked
MH-21	Shoreline Drive	5/16/2016			Conc	Bit	4.0	Casting mild corrosion 1.2' poor rings/mud, no steps, weepers at rings/mineral deposits
MH-22	Shoreline Drive	5/16/2016			Conc	Bit	1.0	Casting mild corrosion, 0.5' rings, slab
MH-23	Spring Street	5/12/2016			Conc	Bit	1.0	Eccentric, fiberglass steps, casting good, rings good
MH-24	Spring Street	5/12/2016			Conc	Bit	3.0	Casting good, eccentric, weepers
MH-26	West Arm Road (W) Langdon Park Easement	5/9/2016	3.20	-3.20	Conc	Bit	3.0	4.2' Rings, Slab, No Cone Section, I&I at 3.2'
MH-27	West Arm Road (W) Langdon Park Easement	5/9/2016			Conc	Rocks	1.0	Under Fence, inside drop east, casting good
MH-28	West Arm Road (W) Langdon Park Easement	5/9/2016	8.00	-8.00	Conc	Grass	3.0	Eccentric, I&I at top of base (weeper), casting good
MH-29	West Arm Road (W) Langdon Park Easement	5/9/2016			Conc	Grass	1.0	No I&I, no steps
MH-30	West Arm Road (W) Langdon Park Easement	5/9/2016	2.50	-2.50	Conc	Grass	4.0	Casting good, major I&I and deposits at 1st joint
MH-31	West Arm Road (W) Langdon Park Easement	5/9/2016			Conc	Bit	1.5	Grout deteriorated, bench good
MH-32	West Arm Road (W) Langdon Park Easement	5/9/2016			Conc	Bit	1.0	Rings good
MH-34	Shoreline Drive	5/17/2016			Conc	Bit/Conc	1.5	0.7' det ring/mud, casting good, no steps
MH-35	Shoreline Drive	5/17/2016			Conc	Bit/Conc	2.5	Exposed agg rings/mud (0.4'), no steps casting good
MH-36	Shoreline Drive	5/17/2016			Conc	Bit/Conc	2.5	1.0' broke/deteriorated rings, casting good, no steps, broken gutter
MH-37	Shoreline Drive	5/16/2016			Conc	Bit/Conc	3.0	No rings, raise 1/2 in, casting good
MH-38	Black Lake Road	5/16/2016			Conc	Bit	1.5	Deteriorating mud, casting good
MH-39	Black Lake Road	5/16/2016			Conc	Bit	3.0	Bit deterioration around casting, casting good, rings poor, no steps, bench build-up
MH-39A	Black Lake Road	5/16/2016			Conc	Bit	2.8	1/2" pav settle, mineral build-up/I&I, casting/ring good
MH-40	Black Lake Road	5/16/2016			Conc	Bit	1.5	1.0' broken rings/mud, no steps, casting good
MH-41	Black Lake Road	5/16/2016			Conc	Bit	2.0	1 ring, 3" mud, no steps, poor dog houses
MH-43	Shoreline Drive	5/16/2016			Conc	Bit	2.0	1.1' rings, alligator cracking around MH, minor I&I at bottom ring

Table 3: Sanitary Sewer Structure Condition Summary
Asset Management Plan
City of Spring Park
October 13, 2017
Sambatek # 20531

Structure	Street	Inspection Date	I&I		Structure Material	Surface Type	Structure Assess.	General Note
			Depth	Elev.				
From								
MH-44	Shoreline Drive	5/16/2016			Conc	Grass	1.0	No I&I, casting good, 1.5' rings, no steps
MH-44A	Shoreline Drive	5/16/2016			Conc	Grass	1.0	Casting offset and lifted
MH-45	Shoreline Drive	5/16/2016			Conc	Bit/Conc	1.3	Ring/Mud cracked/deteriorated, 1 step, casting good, walls good
MH-46	Shoreline Drive	5/16/2016			Conc	Grass	1.3	Mild corrosion casting, no steps, inside drop service east
MH-46B	Warren Avenue	5/16/2016			Conc	Bit	1.3	Ring/Mud poor condition, aluminum steps, casting good
MH-47	Warren Avenue	5/16/2016			Conc	Bit	3.0	Bit, mild deterioration, casting mild corrosion, mud/rings deteriorating (1.5')
MH-48	Warren Avenue	5/16/2016			Conc	Bit	1.0	3 rings, no steps, slab
MH-49	West Arm Road Central - Lift Station 5	5/9/2016			Conc	2" Rocks	3.0	Bottom Barrel Section I&I, 1' Plastic Ring, 1' Conc Ring
MH-50	West Arm Drive East	5/9/2016	6.00	-6.00	Conc	Bit	1.0	Eccentric, 4-2" Rings (good), casting good
MH-51	West Arm Drive East	5/9/2016			Conc	Bit	1.0	New Casting, 7-2" Rings good
MH-52	West Arm Drive East	5/9/2016			Conc	Bit	1.3	Casting Good, small chunk (2" on NE rim), I&I in barrel pick hole
MH-53	West Arm Drive East	5/9/2016			Conc	Bit	1.0	3' Rings, Top 3 plastic, casting good, no steps
MH-53A	West Arm Road Central Extension	5/9/2016			Conc	2" Rocks	1.0	Eccentric, casting good, 3 rings
MH-54	West Arm Road Central Extension	5/9/2016			Conc	Grass	1.0	Eccentric, casting good, no steps, Inside Drop West
MH-54A	West Arm Road Central Extension	5/9/2016			Conc	Grass	1.0	Slab, casting good, 1.8' plastic ring, 0.4' conc ring, fiberglass steps
MH-55	Channel Road	5/16/2016			Conc	Bit	1.0	Casting/rings good, plastic steps
MH-56	Channel Road	5/16/2016			Conc	Bit	1.3	Poor mud/rings, plastic steps, casting good
MH-57	Interlachen Road (S)	5/16/2016			Conc	Bit	1.0	1.2' rings, casting good, mild corrosion, low flow
MH-58	Interlachen Road (S)	5/16/2016			Conc	Bit/Conc	3.0	Casting good, mild corrosion, 6 rings, I&I/mineral dep n-side
MH-59	Rosehill Lane	5/16/2016			Conc	Grass	1.0	Casting mild corrosion, good, plastic/con rings (3.2')
MH-60	Shoreline Drive	5/17/2016			Conc	Bit/Conc	1.3	0.5' det mud/rings, casting good, no steps, grinder
MH-60A	Presbyterian Homes	5/17/2016			Conc	Conc DW	1.5	Casting good, broken Dwy apron around MH, plastic steps
MH-60B	Presbyterian Homes	5/17/2016			Conc	Bit	1.0	Casting, rings, mud good
MH-60C	Presbyterian Homes	5/17/2016			Conc	Bit	2.0	Casting mild corrosion, rings/mud moderate deterioration, plastic steps
MH-61	Interlachen Road (S)	5/16/2016			Conc	Bit	1.0	Mild casting corrosion, rings fair, overall good condition
MH-63	Shoreline Drive	5/16/2016			Conc	Bit	3.5	Casting missing chip, 1.2' rings good, I&I with mineral deposits
MH-63A	Shoreline Drive	5/16/2016			Conc	Grass	3.0	Casting mild corrosion and small chunks missing, fiberglass steps, 1.2' deteriorating mud and rings
MH-66	DelOtero Avenue East	5/12/2016			Conc	Bit	1.0	2.4' rings, eccentric, no steps, casting good
MH-67	DelOtero Avenue East	5/12/2016			Conc	Bit	4.0	Mild casting corrosion, broken/missing grout, bolt on bench, circum weeping, mineral deposits
MH-67A	DelOtero Avenue East	5/12/2016	2.00	-2.00	Conc	Bit	4.0	Cracked rings, mineral I&I weeping on wall and slab
MH-68	DelOtero Avenue East	5/12/2016			Conc	Bit	1.3	Casting good, raising casting 1", fiberglass steps
MH-68A	DelOtero Avenue East	5/12/2016			Conc	Bit	1.0	Casting/rings good, slab, Forcemain clean-out
MH-69	Sunset Drive	5/17/2016			Conc	Bushes	1.0	No steps, casting good, offset rings, no I&I, good overal
MH-69A	Sunset Drive	5/17/2016			Conc	Grass	1.0	Weeping I&I through lift hold, some minor mineral dep, good casting, 2 - 1' rings
MH-70	Sunset Drive	5/17/2016			Conc	Bit	1.5	No steps, casting good, 1.7' rings, grout deteriorated
MH-71	Sunset Drive	5/17/2016			Conc	Bit/Gravel	1.0	1.5' Rings, low flow, debris on bench, no steps
MH-72	Sunset Drive	5/12/2016			Conc	Bit	1.0	Eccentric, casting, rings, good
MH-72A	Sunset Drive							
MH-72B	Sunset Drive							
MH-73	Sunset Drive	5/17/2016			Conc	Bit	1.0	Casting good, ring broken, no steps, no i&i
MH-74A	Sunset Drive	5/17/2016			Conc	Bit	1.0	Casting, rings, good.
MH-74B	Sunset Drive	5/17/2016			Conc	Grass	4.0	Barrel Aggregate Exposed, 8" inside drop
MH-75	Sunset Drive	5/12/2016			Conc	Grass	1.0	Eccentric, 4" plastic, casting good
MH-76	Sunset Drive	5/12/2016			Conc	Grass		
MH-77	Sunset Drive	5/12/2016			Conc	Bit	5.0	6" and 1" rings, casting good, eccentric, minor deterioration on conce, exposed agg on barrel, weeping I&I
MH-79	Northern Avenue	5/12/2016			Conc	Bit		
MH-80	Northern Avenue	5/12/2016			Conc	Bit	3.0	Eccentric, 2.6' rings, minor roots at doghouse and top of base slab, no steps
MH-81	Northern Avenue	5/12/2016			Conc	Bit	2.0	Eccentric, top ring/mud deteriorating, no steps
MH-82	Northern Avenue	5/12/2016			Conc	Bit	2.0	Eccentric, top ring deteriorating
MH-83	Northern Avenue	5/12/2016			Conc	Bit	2.0	Bit around casting cracking, 2nd ring deteriorating
MH-84	Mapleton Avenue	5/12/2016			Conc	Bit	1.0	Eccentric, no steps, casting good, rings good
MH-85	Mapleton Avenue	5/12/2016			Conc	Bit	3.0	1st barrel minor rooting, slight deteriorating grout, doghouse rooting, no steps, casting good
MH-86	Lilac Road	5/12/2016	1.50	-1.50	Conc	Grass	3.0	Small roots (1.5') minor I&I at barrel section (1.5)
MH-87	Lilac Road	5/12/2016			Conc	Bit	3.0	Minor I&I around service, casting, doghouse, broken ring at top, eccentric
MH-88	Mapleton Avenue	5/12/2016			Conc	Bit	1.3	Broken bit around casting, 1.4' rings, casting good, eccentric
MH-89	Mapleton Avenue	5/12/2016			Conc	Bit	1.0	Eccentric, casting good, 2' rings, no steps
MH-91	Hazeldell Ave.	5/12/2016			Conc	Bit	1.5	Grout/ring deterioration, eccentric, 1.4' rings
MH-92	Park Lane	5/12/2016			Conc	Bit	1.3	Ring debris in flow, bit alligator cracking, mild corrosion on casting
MH-93	Park Lane	5/12/2016			Conc	Grass	3.0	I&I weeper all around base, casting good, eccentric

Table 3: Sanitary Sewer Structure Condition Summary
Asset Management Plan
City of Spring Park
 October 13, 2017
 Sambatek # 20531

Structure	Street	Inspection Date	I&I		Structure Material	Surface Type	Structure Assess.	General Note
			Depth	Elev.				
From								
MH-94	Park Lane	5/12/2016			Conc	Grass	1.0	1.5' rings good, eccentric, no steps
MH-95	Togo Road	5/12/2016			Conc	Bit	3.0	2' semi-deteriorated grout, minor I&I at rings
MH-96	Togo Road	5/12/2016			Conc	Bit	3.0	1.6' rings, no steps, eccentric, minor roots bottom joint
MH-97	Sunset Drive	5/17/2016			Conc	Gravel Dwy	2.0	1' Plastic ring, deteriorated mud, plastic broken, some mineral dep, no I&I, 4" Inside drop, no steps
MH-98	Sunset Drive	5/12/2016			Conc	Bit	1.0	Eccentric, casting good, rings 1.8' good
MH-99	Sunset Drive	5/12/2016			Conc	Grass/Fence	3.0	Eccentric, 2.5 rings good, casting good, I&I at lift hole and dog house
MH-100	Sunset Drive	5/12/2016			Conc	Bit	1.0	4 rings, no steps, eccentric
MH-100	West Arm Drive Dr	5/12/2016			Conc	Bit	1.0	Eccentric MH, casting, rings good, fiberglass steps
MH-101	West Arm Drive Dr	5/12/2016			Conc	Bit	1.0	Casting, rings, walls good, fiberglass steps
MH-101	Dickson Avenue	5/12/2016			Conc	Bit	3.0	I&I below cone, I&I at W-drop (weepers, eccentric, no steps, casting good)
MH-102	Dickson Avenue	5/12/2016			Conc	Grass	3.0	Casting offset, eccentric, weeping under plastic rings, 1' of plastic
MH-102	West Arm Drive Dr	5/9/2016			Conc	Bit	3.0	2-1' rings, I&I above rings (weeper)
MH-103	Budd Lane	5/12/2016	1.00	-1.00	Conc	Bit (Dwy)	3.0	I&I under casting, dripper, raise MH 1", mineral deposits
MH-103	West Arm Drive Dr	5/9/2016			Conc	Bit	2.0	2 rings, cracked grout, fiberglass steps, casting good
MH-104	Dickson Avenue Easement	5/12/2016			Conc	Grass	3.0	I&I weeper, mild casting corrosion and offset, 4" plastic rings, slab
MH-104	West Arm Drive Dr	5/9/2016			Conc	Bit	1.0	Fiberglass steps, casting good, precast invert
MH-105	West Arm Drive Dr	5/9/2016			Conc	Bit	1.0	No I&I, Fiberglass steps, 1' Ring
MH-105	Shoreline Drive	5/16/2016			Conc	Bit/Conc	3.0	I&I south, no steps, broken ring/mud, casting good
MH-106	Lafayette Lane Easement	5/17/2016			Conc	Bit	1.0	Casting mild corrosion, ring good, plastic steps
MH-106	West Arm Drive East	5/9/2016			Conc	Bit	1.0	Eccentric, fiberglass steps, casting good
MH-107	West Arm Drive East	5/9/2016			Conc	Grass	1.0	Eccentric, fiberglass steps, casting good

Table 4: Watermain Condition Summary
Asset Management Plan
City of Spring Park
 October 13, 2017
 Sambatek # 20531

Street	Segment		Pipe Length [ft]	Pipe Material	Pipe Size [in]	Year Built / Replaced	# of Recorded Breaks	Last Break	Surface	G.W. Ele Above/Below 930'	Condition Rating (1-5, 5 = Bad)
	From	To									
Black Lake Road	Shoreline Drive	Rosehill Lane Ext	200	CIP	6	1964	0		Bit		1
Black Lake Road	Rosehill Lane Ext	Channel Road Ext	320	CIP	6	1964	1	1993	Bit		2
Black Lake Road	Channel Road Ext	South Cul-de-Sac	280	CIP	6	1964	0		Bit		1
Budd Lane	West End	Dickson Ave	175	CIP	6	1964	0		Bit	Above	1
Channel Road	Black Lake Road	Interlachen Road	625	CIP	8	2009	0		Bit		1
DelOtero Avenue East	Shoreline Place	East Cul-de-Sac	595	CIP	6	1964	0		Bit	Above	1
DelOtero Avenue West	Sunset Drive	Shoreline Place	570	DIP	8	2006	0		Bit	Below	1
Dickson Avenue	Budd Lane	Sunset Drive	445	CIP	6	1964	1	2005	Bit	Above	2
Dickson Avenue Ext.	West End	Dickson Ave	260	CIP	6	1964	0		Turf	Below	1
Hazeldell Ave.	Northern Ave	Mapleton Ave	350	CIP	6	1964	0		Bit		1
Interlachen Road	Warren Ave	Shoreline Drive	390	CIP	8	1964	0		Bit		1
Interlachen Road	Shoreline Drive	Rosehill Lane	270	CIP	6	1964	0		Bit		1
Interlachen Road	Rosehill Lane	Channel Road	260	CIP	6	1964	2	2008	Bit	Below	2
Interlachen Road	Channel Road	Southern Border	440	CIP	6	1964	2	1999	Bit	Above	2
Island Drive	Park Island Apartments	Lafayette Lane Extension	720	DIP	6	1964	0		Bit		1
Island Drive	Lafayette Lane Extension	Shoreline Drive	620	DIP	6	1964	0		Bit		1
Kings Road North	Shoreline Drive	Warren Ave	375	CIP	8	1964	0		Bit		1
Kings Road South	Shoreline Drive	Lafayette Lane	230	CIP	6	1964	1	2001	Bit		2
Lafayette Lane	West Cul-de-Sac	Kings Road South	680	CIP	6	1969	5	2010	Bit		5
Lafayette Lane Extension West	West Cul-de-Sac	Island Drive	1260	CIP	6	1964	0		Turf	Above	1
Interlachen Road (Bayview Apartments)	Interlachen Road	Hydrant 51	290	CIP	6	1964	0		Bit/Turf		1
Lilac Road	Northern Ave	Mapleton Ave	325	CIP	6	1964	0		Bit		1
Mapleton Avenue	Sunset Drive	Cul-de-Sac	520	CIP	6	1964	1	2011	Bit	Below	2
Marina Center Storefront	West Parking Lot	Shoreline Drive	340		6	1964	0		Bit		1
MGM Liquor	MGM	Shoreline	615		6	1964	0		Bit		1
Northern Avenue	Sunset Drive	Hazeldell Ave	700	CIP	6	1964	1	1999	Bit		2
Northern Avenue	Hazeldell Ave	Park Lane Ext	820	CIP	6	1964	1	2014	Bit		2
Park Lane	Sunset Drive	East End	845	CIP	6	1964	1	2002	Bit	Above	2
Park Lane Ext	East End of Park Lane	Northern Ave	485	CIP	6	1964	0		Turf		1
Pres. Homes West Parking Lot	Shoreline Drive	Lafayette Lane Extension	680		8	2012	0		Bit		1
Pres. Homes East Parking Lot	Shoreline Drive	Lafayette Lane	435		8	2012	0		Bit		1
Pres. Homes North Parking Lot	Shoreline Drive	East Parking Lot	670		6	2012	1	2001	Bit		2
Pres. Homes South Parking Lot	Lafayette Lane Extension	Hydrant 45	220		6	2012	0		Bit		1
Rosehill Lane	Black Lake Road	Interlachen Road	440	CIP	6	1964	0		Bit		1
Bayview Place	Shoreline Drive	DelOtero Ave	230	CIP	6	1964	0		Bit		1
Shoreline Drive	Western Border	Island Drive	850	CIP	6	1964	1	2001	Bit		2
Shoreline Drive Crossing	West Arm Road (W)	Shoreline Drive	190	DIP	6	2005	0		Bit		1
Shoreline Drive	Island Drive	Entrance	730	CIP	6	1964	0		Bit		1
Shoreline Drive	Presb Homes W. Entrance	East Parking Lot	440	CIP	6	1964	3	2007	Bit		4
Shoreline Drive	East Parking Lot	Kings Road	520	CIP	6	1964	0		Bit		1
Shoreline Drive	Kings Road	Interlachen Road	880	CIP	6	1964	3	2008	Bit		4
Shoreline Drive	Sunset Drive	Sunset Drive	1505	CIP	8	1964	5	2008	Bit		5
Shoreline Drive	Sunset Drive	Bayview Pl	525	CIP	6	1964	1	2012	Bit	Above	2
Spring Street	West End	Sunset Drive	300	DIP	8	2004	0		Bit		1
Sunset Drive	Shoreline Drive	Spring Street	230	DIP	8	2004	0		Bit		1
Sunset Drive	Crossing from Shoreline Pl	Spring Street	70	CIP		1964	0		Bit		1
Sunset Drive	Spring St	Northern Ave	390	CIP	8	1964	1	1990	Bit		2
Sunset Drive	Northern Ave	Mapleton Ave	650	CIP	8	1964	2	2005	Bit	Above	3
Sunset Drive	Mapleton Ave	Park Lane	665	CIP	8	1964	2	1994	Bit	Above	3
Sunset Drive	Park Lane	Dickson Ave	880	CIP	6	1964	3	2011	Bit		4
Sunset Drive	Dickson Ave	Shadywood Road	1070	CIP	6	1980	7	2014	Bit	Above	5
Togo Road	Park Lane	East End	540	CIP	6	1964	1	1994	Bit	Above	2
Warren Avenue	Kings Road	Water Tower Connection	490	CIP	8	1964	0		Bit		1
Warren Avenue	Water Tower Connection	Interlachen Road	290	CIP		1963	0		Bit		1
West Arm Drive	4326 W.A.R. (East)	Sunset Drive	2300	DIP	8	1994/1996	1	2014	Bit		2
West Arm Road Central	4512 W.A.R. (Central)	4428 W.A.R. (Central)	730	CIP	6	1964	2	2006	Bit	Above	3
West Arm Road East	4428 W.A.R. (Central)	4326 W.A.R. (East)	715		6	1976	1	1990	Bit		2
Easement	West Arm Road (W)	West Arm Road (W)	795	CIP	6	1964	0		Bit	Above	1
West Arm Road West	Langdon Easement	Langdon Easement	1395	CIP	6	1964	1	1998	Bit	Above	2
West Arm Road West	4608 W.A.R.	4512 W.A.R.	705	CIP	6	1964	1	1996	Bit	Below	2
Water Tower	Water Tower	Warren Ave	223	DIP	14	2004	0		Bit		1
Water Tower Extension	Warren Ave	West Arm Road East	140	CIP	8	1964	0		Bit		1
Totals			34,898				52				

Table 5: Storm Sewer Pipe Condition Summary
Asset Management Plan
City of Spring Park
 October 13, 2017
 Sambatek # 20531

Structure		Structure		Street		Length	Diameter	Pipe	Last Year	I&I	G.W. Ele	Surface
From	Type	To	Type	Name	Side	[ft]	[in]	Material	of Improvement		Above/Below	
											930'	
(1-5, 5 = None)												
178	CB	177	FES	4608 W.Arm. R. W	East	251	24		1968		Above	Turf
179	MH	179/182	Pipe on Pipe	HCRRA	South	48	24	RCP	1981		Below	Bit
180	MH	179	MH	HCRRA	South	276	24	RCP	1981		Below	Bit
181	CB	180	MH	HCRRA	South	50	24	RCP	1981		Below	Bit
182	FES	179/182	Pipe on Pipe	HCRRA	South	30	24		1968		Below	Turf
184	MH	183	FES	Shoreline Dr	South	74	21	RCP	1979		Below	Turf
185	MH	184	MH	Shoreline Dr	South	108	21	RCP	1979		Below	Conc
186	CB	185	MH	Shoreline Dr	South	30	21	RCP	1979		Below	Conc
187	MH	186	CB	Shoreline Dr	South	157	21	RCP	1979		Below	Conc
188	MH	187	MH	Shoreline Dr	South	36	18	RCP	1979		Below	Conc
189	CB	188	MH	Shoreline Dr	South	54	18		1964		Below	Conc
190	CB	189	CB	Shoreline Dr	South	364	18		1964			Bit
191	CB	190	CB	Shoreline Dr	South	247	15		1964			Bit
192	CB	191	CB	Shoreline Dr	South	200	12		1964			Bit
193	CB	192	CB	Shoreline Dr	South	136	12		1964			Bit
194	CB	193	CB	Shoreline Dr	South	44	12		1964			Bit
195	CB	192	CB	Shoreline Dr	South	34	12		1964			Bit
196	CB	191	CB	Shoreline Dr	South	43	12		1964			Bit
197	CB	190	CB	Shoreline Dr	South	42	12		1964			Bit
198	CB	187	MH	Shoreline Dr	South	41	12		1964		Below	Conc
199	CB	198	CB	Shoreline Dr	South	10	12		1964		Below	Bit
200	CB	199	CB	Shoreline Dr	South	31	12		1964		Below	Bit
202	FES	201	FES	HCRRA	South	40	18	CMP	1983		Below	Turf/Bit
204	FES	203	FES	HCRRA	South	53	15	CMP	1983		Below	Turf/Bit
206	FES	205	FES	HCRRA	South	86	12				Below	Turf/Bit
208	FES	208/209	Pipe on Pipe	HCRRA	North	45	18	RCP	2005		Below	Turf/Bit
209	FES	208/209	Pipe on Pipe	HCRRA	North	28	18	RCP	2005		Below	Turf/Bit
179/182	Pipe on Pipe	178	CB	HCRRA	North	58	24		1968		Below	Turf
208/209	Pipe on Pipe	207	FES	HCRRA	North	168	18	RCP	2005		Below	Turf/Bit
166	MH	165	FES	4579 Shoreline Dr	North	27	24	RCP	2012		Above	Turf
167	MH	166	MH	4579 Shoreline Dr	North	51	24	HDPE	2012		Above	Turf
168	CB	167	MH	4569 Shoreline Dr	West	130	24	HDPE	2012			Turf
169	CB	168	CB	4569 Shoreline Dr	West	53	24	HDPE	2012			Bit
170	CB	169	CB	4559 Shoreline Dr	South	78	18	HDPE	2012			Bit
171	CB	170	CB	4559 Shoreline Dr	South	75	10	PVC	2012			Bit
172	CB	169	CB	4559 Shoreline Dr	South	65	24	HDPE	2012			Bit
173	CB	172	CB	4559 Shoreline Dr	West	135	18	HDPE	2012			Bit
174	CB	173	CB	4559 Shoreline Dr	North	68	18	HDPE	2012			Bit
175	CB	174	CB	4559 Shoreline Dr	North	63	15	HDPE	2012			Turf/Bit
176	CB	175	CB	4559 Shoreline Dr	North	46	12	HDPE	2012			Turf/Bit
127	CB	126	FES	4400 W. Arm Road. W	South	36	24	CMP	1964			Turf/Bit
128	FES	127A	CB	to W.A.R. BMP		55	24	STL	2015			Turf
130	CB	129	FES	2351 Kings Rd	East	75	24	RCP	1990			Turf/Bit
127A	CB	127	CB	from W.A.R. BMP		57	24	CMP	1964			Bit
130A	CB	130	CB	2351 Kings Rd	East	70	21	RCP	1990			Bit
132	MH	131	FES	Lake Minnetonka		179	18	RCP	1987		Above	Turf/Bit
133	FES	132	MH	From L.L. BMP	Southwest	74	18	RCP	1987		Above	Turf/Bit
135	CB	134	FES	Lafayette Ln BMP	South	23	12	RCP	1992		Above	Turf
136	CB	135	CB	4467 Lafayette Ln	East	42	12	RCP	1992		Above	Bit
138	MH	137	FES	Lafayette Ln BMP	East	49	18	RCP	1992		Below	Turf
139	CB	138	MH	Lafayette Ln	North	200	18	RCP	1992		Below	Bit
140	CB	139	CB	Kings Rd	East	70	12	RCP	1992		Below	Bit

Table 5: Storm Sewer Pipe Condition Summary
Asset Management Plan
City of Spring Park
 October 13, 2017
 Sambatek # 20531

Structure		Structure		Street		Length	Diameter	Pipe	Last Year	I&I	G.W. Ele	Surface
From	Type	To	Type	Name	Side	[ft]	[in]	Material	of		Above/Below	
									Improvement		930'	
141	CB	139	CB	Kings Rd	West	45	12	RCP	1992		Below	Bit
143	MH	142	FES	Lafayette Ln BMP	Northwest	38	24		2012			Turf
144	CB	143	MH	Pres. Homes	East	198	15		2012			Bit
145	MH	144	CB	Pres. Homes	East	90	15		2012			Bit
146	MH	145	MH	Shoreline Dr	South	38	15		2012			Bit
147	CB	146	MH	Shoreline Dr	South	26	15		2012			Bit
148	CB	147	CB	Shoreline Dr	South	37	15		2012			Bit
149	CB	147	CB	Shoreline Dr	South	324	15		2012			Bit
150	CB	149	CB	Shoreline Dr	South	50	15		2012			Bit
151	CB	150	CB	Shoreline Dr	South	139	15		2012			Bit
152	CB	151	CB	Shoreline Dr	South	76	15		2012			Bit
153	CB	150	CB	Shoreline Dr	South	62	12		2012			Bit
154	CB	149	CB	Shoreline Dr	South	68	12		2012			Bit
155	CB	145	MH	Pres. Homes	North	60	15	HDPE	2012			Bit
156	CB	155	CB	Pres. Homes	North	220	15	HDPE	2012			Bit
157	CB	156	CB	Shoreline Dr	South	39	12	HDPE	2012			Bit
158	CB	156	CB	Pres. Homes	North	152	12	HDPE	2012			Bit
159	CB	144	CB	Pres. Homes	East	41	12		2012			Bit
160	CB	143	MH	Pres. Homes	South	30	21		2012			Bit
161	MH	160A	CB	Pres. Homes	South	134	21		2012			Bit
162	MH	161	MH	Pres. Homes	South	170	18		1966			Bit
163	CB	162	MH	Pres. Homes	South	106	18		1966			Bit
164	CB	162	MH	Pres. Homes	South	123	12	HDPE	2012			Bit
160A	CB	160	CB	Pres. Homes	South	35	21		2012			Bit
WTP		125	FES	Water Treatment Plant	North	38	8		1964			Bit
87	CB	86	FES	4210 W. Arm Dr. BMP	East	24	12	RCP	1996			Turf
88	CB	87	CB	4210 W. Arm Dr.	East	42	12	RCP	1996			Turf
90	CB	89	FES	4216 W. Arm Dr.	North	220	12	RCP	1996			Turf
91	CB	90	CB	4220 W. Arm Dr.	North	230	12	RCP	1996			Turf
92	FES	91	CB	4222 W. Arm Dr.	North	103	12	RCP	1996			Turf
94	CB	93	FES	4226 W. Arm Dr.	West	76	15	RCP	1996			Turf
95	CB	94	CB	4226 W. Arm Dr.	West	54	12	RCP	1996			Turf
97	FES	96	FES	Discharge to Lake		26	15	RCP	1996			Turf
99	CB	98	FES	4248 W. Arm Dr. BMP	West	30	12	RCP	1996			Turf
100	CB	99	CB	4250 W. Arm Dr.	West	97	12	RCP	1996			Turf
106	MH	105	MH	Shoreline Dr	South	74	18		1964			Bit
107	CB	106	MH	Shoreline Dr	North	56	12		1964			Bit
108	CB	106	MH	Shoreline Dr	North	60	12		1964			Bit
109	CB	105	MH	Shoreline Dr	South	93	15		1964			Bit
110	CB	109	CB	Shoreline Dr	South	161	15		1964			Bit
111	CB	110	CB	Shoreline Dr	South	51	12		1964			Bit
112	CB	110	CB	Shoreline Dr	South	174	12		1964			Bit
113	CB	105	MH	Shoreline Dr	South	93	15		1964			Bit
114	CB	113	CB	Shoreline Dr	South	290	12		1964			Bit
115	CB	114	CB	Shoreline Dr	South	89	12		1964			Bit
102	MH	101	FES	Discharge to S.P. Bay		261	30		1964		Above	Bit
103	MH	102	MH	Interlachen Rd	West	127	30		1964		Above	Bit
104	MH	103	MH	Interlachen Rd	East	205	30		1964		Below	Bit
105	MH	104	MH	Interlachen/Shoreview		145	24		1964			Bit
109	FES	103	MH	Interlachen Rd	West	58	15		1964		Below	Bit
110	CB	102	MH	2433 Interlachen Rd	South	70	12		1992		Above	Bit
111	CB	110	CB	2433 Interlachen Rd	West	41	12		1992		Above	Bit
117	FES	116	FES	Discharge to S.P. Bay		41	12		1964		Above	Bit

Table 5: Storm Sewer Pipe Condition Summary
Asset Management Plan
City of Spring Park
 October 13, 2017
 Sambatek # 20531

Structure		Structure		Street		Length	Diameter	Pipe	Last Year	I&I	G.W. Ele	Surface
From	Type	To	Type	Name	Side	[ft]	[in]	Material	of Improvement		Above/Below 930'	
119	CB	118	FES	Discharge to Lake		134	21	RCP	2009			Turf
120	FES	119	CB	From Channel Road BMP	North	84	12	RCP	2009			Turf/Bit
122	CB	121	FES	Discharge to Lake		174	12		1964			Turf/Bit
124	CB	123	FES	Discharge to Lake		91	15	CMP	1979			Turf/Bit
34	CB	33	FES	4044 Sunset Dr	North	230	18		1964		Above	Turf/Bit
35	CB	34	CB	Sunset Dr	East	103	18		1964		Above	Bit
36	CB	35	CB	Sunset Dr	East	105	18		1964		Above	Bit
37	CB	36	CB	2291 Sunset Dr	South	110	15		1964			Bit
38	CB	39	CB	4071 Sunset Dr	East	50	12	RCP	1990		Below	Bit
39	CB	40	CB	From Northern Ave BMP		45	12	RCP	1990		Below	Bit
42	CB	41	FES	To Northern Ave BMP		148	15	RCP	2006		Below	Turf
43	CB	42	CB	Sunset/Northern	East	36	12	RCP	2006		Below	Turf/Bit
44	CB	43	CB	Sunset/Northern	West	56	12	RCP	2006		Below	Bit
46	FES	45	FES	Northern Ave	North	55	12		1964			Bit
85	FES	84	FES	4208 W. Arm Dr.	North	41	21	RCP	1996			Turf
48	CB	47	FES	Discharge to S.P. Bay		72	15		1964			Bit/Conc
49	FES	48	CB	3924 Shoreline Dr	South	38	12		1964			Bit/Conc
50	CB	48	CB	Shoreline Dr	North	116	15		1964			Bit/Conc
51	CB	50	CB	Shoreline Dr	North	135	15		1964			Bit/Conc
52	CB	51	CB	Shoreline Dr	North	161	15		1964			Bit/Conc
53	FES	52	CB	3890 Shoreline Dr	South	137	15		1964			Turf
54	FES	51	CB	3900 Shoreline Dr	South	40	15		1964			Turf
56	CB	55	FES	Discharge to S.P. Bay		96	21		1964		Above	Bit
57	CB	56	CB	Del Otero Ave	West	58	15	RCP	1990		Above	Bit
58	CB	57	CB	Del Otero Ave	South	107	15	RCP	1990			Bit
59	CB	58	CB	3950 Del Otero Ave	West	55	15	RCP	1990			Bit
60	CB	59	CB	3950 Del Otero Ave	West	84	15	RCP	1990			Turf
61	CB	56	CB	Del Otero Ave	East	82	12	RCP	1990		Above	Bit
63	CB	62	FES	Discharge to S.P. Bay		95	24		1964		Above	Bit/Conc
64	CB	63	CB	Shoreline Dr	South	67	24		1964		Above	Bit/Conc
65	MH	63	CB	The Black Oar	South	104	18		1964		Above	Bit/Conc
66	MH	65	MH	The Black Oar	West	45	18		1964			Conc
67	MH	66	MH	The Black Oar	West	65	18		1964			Conc
68	MH	67	MH	Shoreline Pl	South	35	12		1964			Bit/Conc
69	CB	68	MH	Shoreline Pl	North	45	12		1964			Bit/Conc
70	CB	69	CB	From The Mist North	South	154	12		1964			Bit/Conc
71	Drain	69	CB	From The Mist North	South	90	12		1964			Bit/Conc
72	CB	69	CB	From The Mist North	South	74	12		1964			Bit/Conc
73	CB	68	MH	Shoreline Pl	South	187	12		1964			Bit/Conc
75	CB	74	FES	Discharge to S.P. Bay		129	21		1964		Above	Bit
76	CB	75	CB	Sunset Dr	East	62	21		1964		Above	Bit
77	MH	76	CB	Sunset Dr	East	35	21		1964		Above	Bit
78	CB	77	MH	Sunset Dr	West	53	21		1964		Above	Bit
79	CB	78	CB	Sunset Dr	West	116	12		1964			Bit
80	MH	79	CB	Spring St	North	59	15	RCP	2004			Bit
81	CB	80	MH	Spring St	North	56	15	RCP	2004			Bit/Conc
82	CB	81	CB	Spring St	North	99	15	RCP	2004			Bit/Conc
83	CB	77	MH	Sunset Dr	East	63	21		1964			Bit/Conc
Lakeview Lofts	Drain	81	CB	Spring St	North	31	15	RCP	2004			Bit/Conc
8	CB	7	FES	3810 Northern Ave	Southeast	55	12		1964		Below	Turf/Bit
14	CB	13	CB	3901 Sunset Dr	West	84	18		1964		Above	Turf/Bit
15	FES	14	CB	3901 Sunset Dr	West	61	12		1964		Above	Turf/Bit

Table 5: Storm Sewer Pipe Condition Summary
Asset Management Plan
City of Spring Park
 October 13, 2017
 Sambatek # 20531

Structure		Structure		Street		Length	Diameter	Pipe	Last Year	I&I	G.W. Ele	Surface
From	Type	To	Type	Name	Side	[ft]	[in]	Material	of		Above/Below	
									Improvement		930'	
17	FES	16A	MH	3901 Sunset Dr	East	33	18	RCP	2010		Above	Turf
19	FES	18	FES	3965 Sunset Dr	North	57	12		1964		Above	Bit
25	MH	24	MH	3901 Sunset Dr	North	48	18	RCP	2010		Below	Turf
26	MH	25	MH	3901 Sunset Dr	North	49	18	RCP	2010		Below	Turf
27	FES	26	MH	3901 Sunset Dr	North	44	12	RCP	2010		Below	Turf
29	FES	28	FES	3845 Park Ln	North	43	12	RCP	2010		Above	Turf
30	FES	25	MH	3901 Sunset Dr	North	63	12	RCP	2010		Below	Bit
25A	MH	25	MH	3901 Sunset Dr	North	40	12	RCP	2010		Below	Turf
11	CB	10A	MH	3901 Sunset Dr	West	89	12		1964		Above	Turf/Bit
13	CB	12	FES	3901 Sunset Dr	West	66	18		1964		Above	Turf/Bit
20	CB	16A	MH	3901 Sunset Dr	East	97	21		1964		Above	Turf
21	CB	20	CB	3901 Sunset Dr	East	115	21	RCP	2010		Above	Turf
22	CB	21	CB	3901 Sunset Dr	North	55	21	RCP	2010		Above	Turf
23	CB	22	CB	3901 Sunset Dr	North	61	21	RCP	2010		Above	Turf
24	MH	23	CB	3901 Sunset Dr	North	133	12	RCP	2010		Below	Turf
31	CB	24	MH	3901 Sunset Dr	North	52	15	RCP	2010		Above	Bit
32	FES	23	CB	3901 Sunset Dr	North	89	12	RCP	2010			Bit
10A	MH	10	FES	3901 Sunset Dr	West	28	12		1964		Above	Turf
16A	MH	16	FES	3901 Sunset Dr	East	84	18		1964		Above	Bit
9A	FES	9	FES	Discharge to Lake		151	30		1964		Above	Turf
2	CB	1	FES	Discharge to Lake		70	24		1964		Above	Turf/Bit
3	FES	2	CB	Sunset Dr	South	100	24		1964		Above	Turf/Bit
5	MH	4	FES	Discharge to Lake		33	12		1964		Above	Bit
6	FES	5	MH	Dickson Ln	East	31	15		1964		Above	Turf/Bit
Totals						15,973						

Table 6: Storm Sewer Structure Condition Summary
Asset Management Plan
City of Spring Park
 October 13, 2017
 Sambatek # 20531

Structure		Street	Surface	Inspection Date	Structure Material	Grate Type	Structure Assess. (1-5, 5 = Worst)	Recommendation	General Notes	
From	Type									
1	FES	Discharge to Lake	Lake	5/20/2016			1.0		FES submerged under Fletcher's dock	
2	CB	Discharge to Lake	Grass	5/20/2016	Conc		3.5	Casting	Broken beehive, south pipe deterioration, no grout, no steps, 4.75 T.O.G	
3	FES	Sunset Dr	Turf	5/20/2016			1.0		Pipe, no FES	
4	FES	Discharge to Lake	Lake	5/20/2016			1.0		Good	
5	MH	Discharge to Lake	Grass	5/20/2016	Conc		1.0		New, casting good, structure good, 0.2' silt, 3.4' to 8" wide v-notch weir (Stormceptor)	
6	FES	Dickson Ln	Turf/Bit	5/20/2016			1.0		Remove silt fence	
7	FES	3810 Northern Ave	Turf	5/20/2016			1.0		Daylights in hillside, S-side of road	
8	CB	3810 Northern Ave	Turf/Bit	5/20/2016	Conc	R-3235	2.0		Casting good, no steps, broken doghouse, 2.94' bottom	
9	FES	Discharge to Lake	Turf	6/15/2017			2.0		Channel good, sand bag wall	
9A	FES	Discharge to Lake	Turf	5/20/2016			3.0		Poor condition	
10	FES	3901 Sunset Dr	Turf	5/20/2016			3.0		Poor condition	
10A	MH	3901 Sunset Dr	Turf				3.0		Casting sealed, 4' rings, bottom 1/2 doghouse gone, 1'x1' section broken, 0.8' of debris	
11	CB	3901 Sunset Dr	Turf/Bit	5/20/2016	Conc		1.0		Casting good, CB in bit swale	
12	FES	3901 Sunset Dr	Turf/Bit	5/20/2016			3.0		Poor condition	
13	CB	3901 Sunset Dr	Turf	5/20/2016	Conc		2.2		All M.D.s to top of beehive casting, beehive (0.5' from TOC to T.O.Structure)	
14	CB	3901 Sunset Dr	Turf/Bit							
15	FES	3901 Sunset Dr	Turf/Bit	5/20/2016			3.0		Poor condition	
16	FES	3901 Sunset Dr	Bit	6/15/2017			1.0		Tree growing adjacent, overall ok	
16A	MH	3901 Sunset Dr	Turf	5/20/2016	Conc		1.5		Broken dog house north, cable showing n-side, 10.5 bottom of structure, 7.8 top of silt, 3.05 bottom of v-notch, 2.25 top inv. STORMCEPTOR	
17	FES	3901 Sunset Dr	Turf	5/20/2016	Conc		1.0		FES good condition	
18	FES	3965 Sunset Dr	Bit	5/20/2016	Conc		1.0		FES good condition	
19	FES	3965 Sunset Dr	Bit	5/20/2016			1.0		Ok	
20	CB	West side of baseball field	Turf	5/20/2016	Conc	R-2535	1.0		Standing water at 2.75, casting good, plastic steps w-side	
21	CB	NW corner of baseball field	Turf	5/20/2016	Conc	R-2535	1.0		Slab on barrel, plastic steps, casting good	
22	CB	North side of baseball field	Turf	5/20/2016	Conc	R-2535	1.0		Slab on barrel, 3.89' to silt, sump 1.3'	
23	CB	NE side of baseball field	Turf	5/20/2016	Conc	R-2588	3.0	Patch/Replace	Clean	1'x1' - 2' deep hole on w-side of structure, 3.4' of mud (0.6' silt), 1'x1' - 2' deep on e-side of structure
24	MH	NE side of baseball field	Turf	5/20/2016	Conc	R-1760	1.5		CMP north rusted, 0.8' silt, no steps, casting offset, casting good	
25	MH	NE side of baseball field	Turf	5/20/2016	Conc	R-1760	2.2	Grout		Conc bottom, I&I seen, ring is bricks, entire MH needs grouting
25A	FES	SE baseball field	Turf	5/20/2016	Conce		1.0		FES good, w/trash guard	
26	MH	East side of baseball field	Turf	5/20/2016	Conc	R-2535	3.0	Casting	Grout	Wrong casting, CB at high point, I&I seen, grouting required, slab over barrel
27	FES	3901 Sunset Dr	Turf	5/20/2016	HDPE		3.5	Correct FES		Disconnected FES
28	FES	3845 Park Ln	Turf	5/20/2016	CMP		1.0			No FES
29	FES	3845 Park Ln	Turf	5/20/2016	CMP		3.5	Clean inlet		Blocked, outlet covered with bricks
30	FES	3901 Sunset Dr	Turf	5/20/2016	CMP		4.5	R&R		Pipe inlet collapsed
31	CB	3901 Sunset Dr	Bit	5/20/2016	Conc	R-2501	4.0	R&R		Cracked casting, missing structure bottom, degraded pipe, exposed soil
32	FES	3901 Sunset Dr	Bit/Rock	6/5/2017			2.5			Bent edges, broken bit
33	FES	4044 Sunset Dr	Turf	5/20/2016			3.0			1/2 cut HDPE to lake discharge, holding water from lake
34	CB	4044 Sunset Dr	Turf/Bit	5/20/2016	Conc	R-2504	1.5			Plastic steps, cracked rings, 8.30' to bottom
35	CB	2283 Sunset Dr	Bit	5/20/2016	Conc	R-2504	2.0			Casting good, plastic steps, deteriorated mud and rings (1.8')
36	CB	Sunset Dr	Bit	6/15/2017			3.0			Remove inlet protection
37	CB	4071 Sunset Dr	Turf	5/20/2016	Block	R-2561	3.5	Casting	Grout	Broken beehive, no steps, broken doghouse west, I&I noted, bottom 2' block gaps, block w/slab bottom CB, 0.9 height of casting
38	CB	4071 Sunset Dr	Gravel	5/20/2016	Block	R-2501	2.0			Block CB, 7.55' to bottom, 1.5' sediment, not able to strike bottom, no steps
38A	FES	4071 Sunset Dr	Turf	5/20/2016	CMP		1.0			Good
39	CB	4071 Sunset Dr	Bit							
40	FES	From Northern Ave BMP	Turf	5/20/2016			1.0			Discharge to wier box
41	FES	To Northern Ave BMP	Turf	5/20/2016	Conc		1.0			Ok
42	MH	To Northern Ave BMP	Turf	5/20/2016	Conc		1.0			Casting good, rings good, plastic steps
43	CB	SW Sunset/Northern	Conc	5/20/2016	Conc	R-3250-CL	1.5			Casting good, deteriorated rings, plastic steps
44	CB	SE Sunset/Northern	Conc	5/20/2016	Conc	R-3250-CL	1.0			Casting good, no steps
45	FES	Northern Ave	Bit							
46	FES	Northern Ave	Bit	5/20/2016			1.0			Ok
47	FES	Discharge to S.P. Bay	Rip Rap	6/15/2017	Conc		2.0			Chipped end, exposed rebar
47A	FES	Discharge to S.P. Bay	Conc	6/15/2017	Conc					Not located
47B	CB	Discharge to S.P. Bay	Conc	6/15/2017	Conc	R-3250-CL	3.0			Casting good, 0.25 rings, no steps, cracked grout at rings/casting, 0.25' silt, standing water, exposed rebar
47C	CB	Discharge to S.P. Bay	Conc	6/15/2017	Conc	R-3250-CL	3.0			Casting good, no steps, 0.25' rings, 0.25 silt/standing water
47D	CB	Discharge to S.P. Bay	Conc	6/15/2017	Conc	R-3250-CL	1.0			Casting good, 0.25' rings, no steps, 0.08' silt, standing water
48	CB	3932 Shoreline Dr	Conc	5/20/2016	Conc	R-3250-CL	4.0	R&R	Clean	Casting good, no steps, 4.8 top of sludge, 6.80 to bottom, severe exposed rebar, baffle holding back water, 2x4 lodged in structure
48A	CB	3932 Shoreline Dr	Conc	5/20/2016	Conc	R-3250-CL	1.5			Casting good, 1 ring, no steps, block MH
48B	CB	3932 Shoreline Dr	Conc	5/20/2016	Conc	R-3250-CL	4.0	R&R	Clean	Casting good, severe concrete/rebar deterioration, 0.8' debris, low flow
48C	CB	3932 Shoreline Dr	Conc	5/20/2016	Conc	R-3250-CL	1.3			Casting/doghouse good, 0.6' debris
49	FES	3924 Shoreline Dr	Grass	5/20/2016	Conc	R-2561	1.0			Casting good, plastic steps, board in invert, drain tile to NE, 5' to bottom
50	CB	Shoreline Dr	Conc	5/20/2016	Conc	R-3250-CL	4.0	R&R	Clean	Casting good, no rings, top slab rebar exposed, low flow, dediment/debris, concrete debris in 15' invert
51	CB	Shoreline Dr	Conc	5/20/2016	Conc	R-3250-CL	1.3			Casting good, plastic steps, 6' structure, bottom 6.18',0.6' debris
52	CB	Shoreline Dr	Conc	5/20/2016	Conc	R-3250-CL	1.3			Casting good, rings ok, no steps, 6' structure
53	FES	3890 Shoreline Dr	Turf							
54	FES	3900 Shoreline Dr	Turf							
55	FES	Discharge to S.P. Bay	Rip Rap	6/15/2017	Conc		3.0		Clean	Structure good, FES plugged

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Structure		Street	Surface	Inspection Date	Structure Material	Grate Type	Structure Assess. (1-5, 5 = Worst)	Recommendation		General Notes
From	Type									
56	CB	NE corner of Shoreline/Bayview	Conc	5/20/2016	Conc	R-3250-CV	4.5	R&R	Clean	Exposed rebar, deteriorated concrete, casting unsupported on east side, casting good condition
57	CB	Del Otero Ave	Bit	5/20/2016	Conc	R-3250-1	2.5	Clean		Casting good, 0 rings, broken DH laying invert, sediment build-up
58	CB	3950 Del Otero Ave	Conc	5/20/2016	Conc	R-3250-CV	1.0			Casting good, 3 rings, no steps
59	CB	3950 Del Otero Ave	Conc	5/20/2016	Conc	R-2534	2.0			1 plastic step, broken doghouse W & S, 6.27 to bottom, 2.5 to water, casting good, 2.55 to top of 2x6 baffle.
60	CB	3950 Del Otero Ave	Conc	5/20/2016	Conc		1.5			Casting good, no steps, broken doghouse W & S
61	CB	Del Otero Ave	Bit/Conc	5/20/2016	Conc	R-3250-CV	1.0			Casting good
62	FES	Discharge to S.P. Bay	Bit/Conc	6/15/2017			1.0			Good condition, 1/2 silted
63	CB	Shoreline Dr	Bit/Conc	6/15/2017			3.0		Clean	Casting good, 1.75' rings, exposed rebar, cracked grout, 1' silt
64	CB	4032 Shoreline Dr	Bit/Conc	5/20/2016	Block	R-3250-CL	4.0	Casting	R&R	Grate broken, deteriorated concrete, exposed rebar, block CB, I and I seen, concrete debris in sump
65	MH	4032 Shoreline Dr	Conc	5/20/2016			1.0			Cast bottom, casting good, 1 plastic step, 3 rings
66	MH	The Black Oar	Conc				1.0			Not accessible
67	MH	Shoreline Pl	Bit/Conc	6/15/2017			1.0			Grit rem/separator, good condition
68	MH	Shoreline Pl	Bit/Conc	6/15/2017			1.0			0.75' rings, part of grit rem/separator
69	CB	Shoreline Pl	Bit/Conc	6/15/2017			1.0			Casting good, 0.25 silt, minimal I&I, 0.25' rings
70	CB	From The Mist North	Mulch	6/15/2017			2.0			Casting good, 01.25' rings, structure cracked around pipe, no doghouse
71	Drain	From The Mist North	Bit/Conc	6/15/2017						
72	CB	From The Mist North	Turf	6/15/2017			1.0			Casting good, 0.25' rings, plastic steps
73	CB	Shoreline Pl	Bit	6/15/2017			1.0			Casting good, 0.25' debris, 0.75' rings, no steps,
74	FES	Discharge to S.P. Bay	Bit	6/15/2017			1.0			Good
75	CB	Sunset Dr	Conc	6/2/2016	Conc	R-3250-CL	5.0	R&R	Clean	Casting good, no D.H., exposed rebar/aggregate, no bottom, full of sand, severely deteriorated rings
76	CB	Sunset Dr	Bit							
77	MH	4032 Sunset	Bit	5/24/2016						
77A	CB	4032 Sunset	Conc	5/24/2016		R-3250-CL	2.5			I&I west side, poor doghouse, 2 brick courses for rings, casting good
77B	CB	4032 Sunset	Conc	5/24/2016		R-3250-CL	1.3			I&I fast, casting good
77C	CB	4032 Sunset								
78	CB	Sunset Dr	Bit							
79	CB	Spring St	Sdwk	5/20/2016	Conc	R-1760-1	1.0			Casting good, 0.4' rings good
80	MH	Spring St	Sdwk	6/15/2017	Conc	R-3360-A	1.0			Casting good, 3.3' rings, 1" silt
81	CB	Spring St	Bit/Conc	5/24/2016	Conc	R-3251	1.0			Casting good, 1 ring good, no steps
82	CB	4100 Spring St - W Parking Garage	Bit	5/24/2016	Conc	R-2535	1.0			Casting good, 1 ring good, 1 plastic step, bottom 3.95'
82A	CB	4165 Shoreline Dr	Conc	5/24/2016	Conc	R-3250-CL	4.3	Grout	Replace soil	Casting good, 1 plastic step, broken rings, I&I around PVC w/no DH, exposed rebar, rings gone on east side, no soil (2' deep behind casting)
82B	CB	4165 Shoreline Dr	Conc	5/24/2016	Conc	R-3250-CL	2.5			Casting good, W-side I&I under rings, brick ring
82C	CB	4165 Shoreline Dr	Conc	5/24/2016	Conc	R-3250-CL	4.0	Rings	Grout	Casting good, broken rings, missing ring pieces, grout in invert
82D	CB	4165 Shoreline Dr	Conc	6/2/2016	Conc	R-3250-CL	2.5	Rings	Grout	Casting good, 1.7' deteriorated rings and grout, no steps
82E	CB	4165 Shoreline Dr	Conc	6/2/2016	Conc	R-3250-CL	1.0			Casting good, rings good, no steps
83	CB	Sunset Dr	Bit/Conc							
84	FES	4208 W. Arm Dr.	Turf	5/20/2016			1.0			Ok, trash guard
85	FES	4208 W. Arm Dr.	Turf	5/20/2016			1.0			Ok
86	FES	4210 W. Arm Dr. BMP	Turf	5/20/2016	Conc		1.0			No FES, 80% submerged
87	CB	4210 W. Arm Dr. BMP	Bit/Conc	5/20/2016	Conc	R-3530	1.0			Casting good, plastic steps
88	CB	4210 W. Arm Dr.	Bit/Conc	5/20/2016	Conc	R-3530	1.5	Rings		Casting good, deteriorated rings, no steps
89	FES	4216 W. Arm Dr.	Turf	5/20/2016	Conc		1.0			No FES
90	CB	4220 W. Arm Dr.	Turf	5/20/2016	Conc		1.0			Casting good, plastic steps, 2 rings
91	CB	4222 W. Arm Dr.	Turf	5/20/2016	Conc		3.0	Remove wood		Casting good, doghouse cracked, 2x12 in invert
92	FES	4222 W. Arm Dr.	Turf	5/20/2016	Conc		1.0			Ok
93	FES	4226 W. Arm Dr.	Turf	5/20/2016	Conc		1.0			Ok
94	CB	4226 W. Arm Dr.	Conc	5/20/2016	Conc	R-2501	1.5			Cracked doghouse, 3 rings, no steps
95	CB	4226 W. Arm Dr.	Conc	5/20/2016	Conc	R-2501	1.0			Casting good, 2 rings, no steps
96	FES	Discharge to Lake	Turf	5/20/2016	Conc		1.0			Ok
97	FES	Discharge to Lake	Turf	5/20/2016	Conc		1.0			Ok
98	FES	4248 W. Arm Dr. BMP	Turf	5/20/2016	Conc		1.0			Ok
99	CB	4250 W. Arm Dr.	Turf	5/20/2016	Conc		2.0	Grout		Casting good, downstream doghouse cracked, I&I noted, casting offset 4 inches
100	CB	4250 W. Arm Dr.	Turf	5/20/2016	Conc		2.0	Grout		Doghouse poor condition, bricks and mud, I&I noted, 1 ring
100A	CB	4300 W. Arm. Rd. E.	Bit	5/20/2016	Conc		1.0			Casting/rings good, no steps, 2x3 CB
101	FES	Discharge to S.P. Bay	Water	6/2/2016	CMP		1.0			
101A	CB	4309 Interlachen Rd		6/2/2016	Conc		2.0	Grout		Block structure, doghouse not mudded, stool grate
102	MH	2433 Interlachen Rd	Bit	6/2/2016	Conc		1.0			Casting good
102A	CB	2433 Interlachen Rd	Bit	6/2/2016	Conc	R-3067	1.0			Casting good, rings good
102B	CB	2433 Interlachen Rd	Bit	6/2/2016	Conc	R-3067	2.3	Rings	Grout	Casting good, broken rings grout
103	CB	Interlachen Rd	Bit	6/2/2016			2.0	Grout	Clean	Casting good, grate stool, bit bump-out, block MH, broken, loose/missing conc
103A	CB	2401 Interlachen Rd		6/2/2016			1.5			Casting good, grate stool, bit bump-out/swale
104	CB	East side of 4311 Shoreline	Bit	6/2/2016	Conc	R-3250-CL	2.0	Clean		Casting good, 3 rings, 1 plastic step, debris in bottom
104A	CB	East side of 4311 Shoreline	Conc	6/2/2016	Conc	R-2535	2.0	Rings		Casting good, no steps, deteriorating rings
105	CB	Shoreline Dr	Conc	6/2/2016	Conc	R-3250-CL	5.0	R&R		Casting good, rings severe deterioration, exposed rebar, top structure severe deterioration
106	MH	Shoreline Dr	Bit	6/15/2017			1.5			Casting good, 0.75' rings, crack in structure
107	CB	4310 Shoreline Dr	Conc	6/2/2016		R-3250-CL	4.0	R&R		Casting good, deteriorated concrete, exposed rebar, exposed aggregate
107A	CB	4310 Shoreline Dr	Conc	5/24/2016		R-3250-CL	1.0			Casting good, 1 step

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From	Type									
108	CB	Shoreline Dr	Conc	6/2/2016		R-3250-CL	4.5	R&R	Curb	Casting good, no steps, rings ok, deteriorated concrete, exposed rehar, exposed aggregate, broken curb
108A	CB	W-side Tonka Ventures	Conc/Bit	6/2/2016		2'x3' grate	3.0	Rings	Grout	Casting good, rings broken/fallen, debris/aggregate at bottom
108B	CB	W-side Tonka Ventures	Conc/Bit	6/2/2016		2'x3' grate	1.5			Casting good, no dog house, I&I at rings, curb broken
108C	CB	W-side Tonka Ventures	Conc/Bit	6/2/2016		2'x3' grate	1.0			Casting good, rings ok, no steps
108D	CB	W-side Tonka Ventures	Conc	5/24/2016	Conc	R-3250-CL	3.0	Grout	Clean	Casting good, block top good, no steps, debris in bottom, I&I seen
109	CB	4201 Shoreline Dr	Conc	6/2/2016	Conc	R-3250-CL	4.5	Rings		Casting good, rings poor, plastic step (1),
110	CB	2433 Interlachen Rd	Conc	6/2/2016	Conc	R-3250-CL	5.0	R&R	Grout	Casting good, plastic steps, rings deteriorated, rebar exposed, dirt entering through structure, I&I note
111	CB	4164 Shoreline	Bit	5/24/2016	Conc	R-3250-CL	5.0	R&R		Casting good, exposed rebar/det conc, full of debris/silt, block top, w-side casting unsupported, curb elevated holding water, rings broken
112	CB	4201 Shoreline Dr	Bit	6/2/2016	Conc	R-3250-CL	4.0	R&R		Casting good, exposed rebar, deteriorated concrete, rings deteriorated
113	CB	Shoreline Dr	Conc	6/2/2016	Conc	R-3250-CL	1.0			Casting good, plastic steps, rings (3) good
114	CB	4329 Shoreline Dr	Conc	6/2/2016	Conc	R-3250-CL	1.0			Casting good, 1 plastic step
115	CB	4358 Shoreline Dr	Conc	5/24/2016	Conc	R-3250-CL	1.0			Casting good, plastic steps
116	FES	Discharge to S.P. Bay	Bit							Could not locate
117	FES	Discharge to S.P. Bay	Bit							Could not locate
118	FES	Discharge to Lake	Turf	6/2/2016	Conc		1.0			Structure good, 1/2 submerged
119	CB	From Channel Rd BMP - W of LS4	Turf	6/2/2016	Conc		1.5			Casting good, stool grate type casting, full of water
120	FES	From Channel Road BMP	Reeds	6/2/2016	CMP		1.0			3/4 Full of Water
121	FES	Discharge to Lake	Lake	6/2/2016	CMP		1.0			3/4 Full of Water, no FES
122	CB	Discharge to Lake	Bit	6/2/2016	Conc	R-2535	1.0			Casting/rings good, no steps
123	FES	2412 Black Lake Road	Lake	6/2/2016	Conc		2.0	Connect FES		FES not connected
124	CB	2412 Black Lake Road	Bit	6/2/2016	Conc	R-3250-1	1.5			Casting/rings good, no steps, no doghouse, broken missing bit curb
125	FES	Water Treatment Plant	Bit	6/15/2017						
126	FES	4400 W. Arm Road. W	Turf/Bit							
127	CB	4400 W. Arm Road. W	Turf/Bit				1.0			Good
127A	CB	from W.A.R. BMP	Bit							
127B	OCS									
128	FES	to W.A.R. BMP	Turf							
129	FES	2351 Kings Rd	Turf/Bit							
130	CB	2351 Kings Rd	Bit				1.0			Good overall
130A	CB	2351 Kings Rd	Bit				1.0			Good overall
130B	CB						1.0			
130C	CB						3.0	Casting		Cracked grate
130D	MH						1.0			Good
130E	CB						1.0			6.47' Sump
130F	FES									Could not locate
130G	FES									Could not locate
130H	FES									
131	FES	Lake Minnetonka	Turf/Bit				1.0			Trash guard, good overall
132	MH	From L.L. BMP	Turf/Bit				1.5			1' deep in mulch area, W-side of dwy
133	FES	From L.L. BMP	Turf/Bit							Could not locate
134	FES	Lafayette Ln BMP	Turf							Could not locate
135	CB	4467 Lafayette Ln	Conc/Bit	6/2/2016		R-3250-1	1.0			Casting good, 9 rings, I&I weeper
136	CB	4467 Lafayette Ln	Conc/Bit	6/2/2016		R-3237	2.0	Grout		Casting good, 6 rings, no steps, broken invert/bottom
137	FES	Lafayette Ln BMP	Turf							Could not locate
138	MH	Lafayette Ln BMP	Conc/Bit	6/2/2016		R-1760-1	2.5	Grout		Casting good, bit/curb broken/settled, plastic steps, no dog house
139	CB	Kings Rd	Conc/Bit	6/2/2016		R-3250-1	1.5			Casting good, rings good (3), no steps, I&I under rings block MH w/top slab
140	CB	Kings Rd	Conc	6/2/2016		R-3250-1	1.3			Casting good, no rings/steps, 1' leaves
141	CB	Kings Rd	Conc/Bit	6/2/2016		R-3250-1	3.0	R&R		Casting good, no rings/steps, rebar exposed, bituminous in poor condition
142	FES	Lafayette Ln BMP	Turf							
143	MH	Pres. Homes	Bit	6/15/2017						Casting good, bring rings cracked, poor doghouse, structure good
144	CB	Pres. Homes	Bit							
145	MH	Pres. Homes	Bit	6/2/2016			1.0			Casting/rings good
146	MH	4465 Shoreline Dr	Turf	6/2/2016			1.3			Casting/rings good, mass of concrete left in bast of structure
147	CB	Shoreline Dr	Conc	6/2/2016		R-3250-CL	1.0			Casting/rings good, plastic steps
148	CB	4470 Shoreline Dr	Conc	5/24/2016		R-3250-CL	5.0	R&R		Casting good, rings deteriorated, extreme rebar deterioration
149	CB	4401 Shoreline Dr	Conc	6/2/2016		R-3250-CL	1.5			Casting good, rings ok
150	CB	4401 Shoreline Dr	Conc	6/2/2016		R-3250-CL	1.5			Casting good, rings ok, structure cracked
151	CB	4401 Shoreline Dr	Conc	6/2/2016		R-3250-CL	1.5			Casting good, 3 rings, 1 plastic step, cracked around dog houses
151A	CB	SE Corner Kings/Shoreline	Conc	6/2/2016		R-3250-CL	4.5	R&R		Casting good, severe deteriorated concrete, exposed/rusted rebar, clean-out 2-3' of debris
152	CB	4396 Shoreline Dr	Conc	5/24/2016		R-3250-CL	1.5			Casting good, block structure
152A	CB	4396 Shoreline Dr	Conc	5/24/2016						
153	CB	4400 Shoreline Dr	Conc	5/24/2016		R-3250-CL	2.0			Casting good, rings good, bit depressed, new curb
154	CB	4400 Shoreline Dr	Conc	5/24/2016		R-3250-CL	1.0			Casting/rings good
155	CB	Pres. Homes	Conc/Bit	6/2/2016			1.0			Casting/rings good
156	CB	Pres. Homes	Bit	6/2/2016			1.0			Casting/rings good
157	CB	Shoreline Dr	Bit				1.0			Casting/rings good
158	CB	Pres. Homes	Bit	6/2/2016		R-3250-CL	1.0			Casting good

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From	Type								
159	CB	Pres. Homes	Bit	6/2/2016			1.0		Casting good, slight weeping under rings
160	CB	Pres. Homes	Turf	6/2/2016		R-2534	1.0		Casting good, plastic rings
160A	CB	Pres. Homes	Bit	6/2/2016		R-2534	1.3		Casting good, rings poor, plastic steps, no/poor dog houses, large brick gaps, 1' of brick ring, 12.21' to bottom
161	MH	Pres. Homes	Turf	6/2/2016		R-1760-1	1.3		Casting good, rings ok, plastic steps, E-side I&I under bottom ring
162	MH	Pres. Homes	Bit	6/2/2016		R-1760-1	1.0		Casting good, 6" plastic rings, 6" slab, plastic steps
163	CB	Pres. Homes	Bit	6/2/2016		R-2534	2.0		Casting good, invert poor
164	CB	Pres. Homes	Bit	6/2/2016		10' X 1' Trench	1.0		Ok
165	FES	4579 Shoreline Dr	Turf	6/2/2016			1.0		Trash guard, structure good
166	MH	4579 Shoreline Dr	Turf	6/2/2016		R-1760-1	1.0		Casting good, 1 ring, plastic steps
167	MH	4569 Shoreline Dr	Turf	6/2/2016		R-1760-1	1.0		Casting good, 2' sump, 7' to bottom
168	CB	4569 Shoreline Dr	Turf						14.01' sump
169	CB	4559 Shoreline Dr	Bit						
170	CB	4559 Shoreline Dr	Bit						
171	Stub	4559 Shoreline Dr	Bit						
172	CB	4559 Shoreline Dr	Conc/Bit	6/2/2016		R-3250-CL	1.0		Casting good, rings good, plastic steps
173	CB	4559 Shoreline Dr	Conc/Bit	6/2/2016		R-3250-CL	1.0		Casting good, rings good, plastic steps
174	CB	4559 Shoreline Dr	Bit						
175	CB	4559 Shoreline Dr	Turf/Bit						
176	CB	4559 Shoreline Dr	Turf/Bit						
177	FES	4608 W.Arm. R. W	Turf	5/24/2016			1.0		Good condition
178	CB	4608 W.Arm. R. W	Bit	5/24/2016	Conc		2.0	Grout	Casting good, block structure with gaps, I&I seen, N doghouse broken, illegal connection?, top of baffle 1.33'
179	MH	HCRRA	Bit						
180	MH	HCRRA	Bit						
181	CB	HCRRA	Bit						
182	FES	HCRRA	Turf						
183	FES	Shoreline Dr	Turf						Could not locate
184	MH	Shoreline Dr	Turf						Could not locate
185	MH	Shoreline Dr	Conc	6/2/2016			1.5		Standing water in structure
186	CB	Shoreline Dr	Conc	6/2/2016			1.0		Ok
187	MH	Shoreline Dr	Conc/Bit	6/15/2017			2.0		I&I at rings, casting good, 48" 1/3 w/silt
188	MH	Shoreline Dr	Rocks	6/2/2016			1.0		Casting good, 2.4' rings good, plastic steps
189	CB	Shoreline Dr	Bit	6/2/2016		R-3250-CL	1.0		Casting good. 2.2' rings good
189A	CB	Shoreline Dr	Bit	6/2/2016		R-3250-CL	1.0		Casting good. 2.2' rings good
190	CB	Shoreline Dr	Conc	6/2/2016		R-3250-CL	3.0	Replace casting	Cracked casting, 0.9' rings, plastic steps, I&I E-side under ring,
191	CB	Shoreline Dr	Bit						
192	CB	Shoreline Dr	Conc	6/2/2016		R-3250-CL	1.0		Block rings, casting good, plastic steps
193	CB	Shoreline Dr	Conc	6/2/2016		R-3250-CL	1.0		
194	CB	Shoreline Dr	Bit	6/2/2016					
195	CB	4550 Shoreline Dr	Conc	5/24/2016	Conc	R-3250-CL	1.0		Casting good, structure new, 1 ring, no steps
196	CB	4636 Shoreline Dr	Conc	5/24/2016	Conc	R-3250-CL	2.0	Grout Rings	Casting good, ring missing grout
197	CB	4642 Shoreline Dr	Conc	5/24/2016	Conc	R-3250-CL	1.3	Clean/Remove Sed/Debris	Casting good, rings (2) good, 0.3' debris
198	CB	4681 Shoreline Dr	Conc	6/2/2016	Conc	R-3250-CL	1.0		Casting good, no rings/steps
199	CB	4681 Shoreline Dr	Bit	5/24/2016	Conc	R-3250-CL			
200	CB	4700 Shoreline Dr	Conc	5/24/2016	Conc	R-3250-CL	1.0		Casting good, rings good
200A	CB	4700 Shoreline Dr	Conc	5/24/2016	Conc	R-3250-CL	3.5	R&R	Casting good, rings deteriorated, exposed rebar, deteriorated concrete, block MH
201	FES	4786 Shoreline Dr	Turf/Bit	5/24/2016					Upstream from 202
202	MH	4786 Shoreline Dr	Turf/Bit	5/24/2016			1.0	Exchange san lid with storm lid	Rings good, casting buried 4", sanitary lid used, no steps, 70' from PP, 21' from west FES, 28' from W curb, 6' from N curb
203	FES	4786 Shoreline Dr	Turf/Bit	5/24/2016			1.0		None
204	FES	4786 Shoreline Dr	Turf	5/24/2016			1.0		FES surrounded by wood baffle
205	FES	HCRRA	Turf	5/24/2016			1.0		Pipe drains to bowl, doesn't drain to lake, approx 9' from lake
206	FES	HCRRA	Turf/Bit	5/24/2016			1.0		None
207	FES	HCRRA	Turf	5/24/2016			1.0		No FES, buried outlet, homeowner established flowline to water edge
208	FES	HCRRA	Turf/Rock	6/15/2017			2.0		2/3 full
209	FES	HCRRA	Turf/Bit	5/24/2016	CMP		2.5	R&R N pipe	Pipe ellipsoidal, crack in top pipe, possibly plugged outlet, 8.4' from outlet to tee
210	CB	4786 Shoreline Dr (on Shoreline)	Conc	5/24/2016		R-3250-CL	1.0		Casting/rings (3) good, steps good
Lofts	Drain	Spring St	Bit/Conc						
WTP		Water Treatment Plant	Bit						

Table 7: Estimated Project Costs
Asset Management Plan
City of Spring Park
 October 13, 2017
 Sambatek # 20531

Project Name	Priority	Street/Utility	From	To	2018	2020	2022	2024	2026	2028	TBD	Total	Construction Contingency (25%)	Estimated Construction Cost	Engineering, Legal, and Administration (25%)	Total Estimated Project Cost
Shoreline Drive East Utility Improvements	1/3	Shoreline Drive (CSAH-15)	Interlachen	Orono	\$ 546,775							\$ 546,775	\$ 136,694	\$ 683,468	\$ 170,867	\$ 854,335
Shoreline Drive East Utility Improvements	1/3	Interlachen Road (CSAH-125)	Shoreline	Shorewood	\$ 268,959							\$ 268,959	\$ 67,240	\$ 336,199	\$ 84,050	\$ 420,249
Shoreline Drive East Utility Improvements	1/3	Sunset Drive (CSAH-51)														
Shoreline Drive East Utility Improvements	1/3	Spring Street														
Shoreline Drive East Utility Improvements	1/3	Bayview Place	Shoreline Pl	Shoreline Dr	\$ 65,124							\$ 65,124	\$ 16,281	\$ 81,406	\$ 20,351	\$ 101,757
Shoreline Drive East Utility Improvements	1/3	Shoreline Place	West End	Bayview Pl	\$ 110,259							\$ 110,259	\$ 27,565	\$ 137,824	\$ 34,456	\$ 172,280
Shoreline Drive East Utility Improvements	1/3	Del Otero Ave	Bayview Pl	Cul de Sac	\$ 190,287							\$ 190,287	\$ 47,572	\$ 237,858	\$ 59,465	\$ 297,323
West Arm Road West Improvements	2	W.A.R.W. D&U Easement				\$ 716,348						\$ 716,348	\$ 179,087	\$ 895,435	\$ 223,859	\$ 1,119,294
Sunset Drive Area Improvements	1	Northern Avenue					\$ 669,452					\$ 669,452	\$ 167,363	\$ 836,815	\$ 211,704	\$ 1,048,519
Sunset Drive Area Improvements	1	Mapleton Avenue					\$ 251,261					\$ 251,261	\$ 62,815	\$ 314,076	\$ 78,519	\$ 392,595
Sunset Drive Area Improvements	1	Lilac Road					\$ 174,969					\$ 174,969	\$ 43,742	\$ 218,711	\$ 54,678	\$ 273,389
Sunset Drive Area Improvements	1	Hazeldell Avenue					\$ 139,902					\$ 139,902	\$ 34,975	\$ 174,877	\$ 43,719	\$ 218,596
Sunset Drive Area Improvements	1	Sunset Drive (CSAH-51)					\$ 638,687					\$ 638,687	\$ 159,672	\$ 798,359	\$ 200,090	\$ 998,449
Sunset Drive Area Improvements	1	Park Lane					\$ 343,106					\$ 343,106	\$ 85,776	\$ 428,882	\$ 107,221	\$ 536,103
Sunset Drive Area Improvements	1	Togo Road					\$ 274,692					\$ 274,692	\$ 68,673	\$ 343,365	\$ 85,841	\$ 429,206
Sunset Drive Area Improvements	1	Budd Lane					\$ 97,219					\$ 97,219	\$ 24,305	\$ 121,524	\$ 30,381	\$ 151,905
Sunset Drive Area Improvements	1	Dickson Ave					\$ 149,756					\$ 149,756	\$ 37,439	\$ 187,195	\$ 46,799	\$ 233,994
Sunset Drive Area Improvements	1	Dickson Ave Easement					\$ -					\$ 54,800	\$ 13,700	\$ 68,500	\$ 17,125	\$ 85,625
Sunset Drive Area Improvements	1	Dickson Ave Extension					\$ 44,153					\$ 44,153	\$ 11,038	\$ 55,191	\$ 13,798	\$ 68,989
Black Lake Area Improvements	3	Channel Road						\$ 194,631				\$ 194,631	\$ 48,658	\$ 243,289	\$ 60,822	\$ 304,111
Black Lake Area Improvements	3	Black Lake Road						\$ 336,239				\$ 336,239	\$ 84,060	\$ 420,299	\$ 105,075	\$ 525,374
Black Lake Area Improvements	3	Rose Hill Lane						\$ 44,625				\$ 44,625	\$ 11,156	\$ 55,781	\$ 13,946	\$ 69,727
Black Lake Area Improvements	3	Kings Road South						\$ 70,961				\$ 70,961	\$ 17,740	\$ 88,701	\$ 22,175	\$ 110,876
Black Lake Area Improvements	3	Lafayette Lane						\$ 231,105				\$ 231,105	\$ 57,776	\$ 288,881	\$ 72,220	\$ 361,101
West Arm Road Central/Warren Ave Area Improvements	4	Warren Avenue							\$ 406,233			\$ 406,233	\$ 101,558	\$ 507,791	\$ 126,948	\$ 634,739
West Arm Road Central/Warren Ave Area Improvements	4	W.A.R. Central							\$ 164,542			\$ 164,542	\$ 41,136	\$ 205,678	\$ 51,419	\$ 257,097
West Arm Road Central/Warren Ave Area Improvements	4	W.A.R.C. D&U Easement							\$ -			\$ 163,500	\$ 40,875	\$ 204,375	\$ 51,094	\$ 255,469
West Arm Road Central/Warren Ave Area Improvements	4	Interlachen Road	Shoreline Dr	Warren Ave					\$ 170,194			\$ 170,194	\$ 42,548	\$ 212,742	\$ 53,186	\$ 265,928
West Arm Road Central/Warren Ave Area Improvements	4	Kings Road North							\$ 132,392			\$ 132,392	\$ 33,098	\$ 165,490	\$ 41,373	\$ 206,863
West Arm Road Central/Warren Ave Area Improvements	4	Patties Lane							\$ 101,789			\$ 101,789	\$ 25,447	\$ 127,236	\$ 31,809	\$ 159,045
Southwest Area Improvements	5	Lafayette Lane Easement								\$ -		\$ 418,750	\$ 104,688	\$ 523,438	\$ 130,859	\$ 654,297
Southwest Area Improvements	5	Presbyterian Homes WM								\$ -		\$ 236,655	\$ 59,164	\$ 295,819	\$ 73,955	\$ 369,774
Southwest Area Improvements	5	Island Drive								\$ -		\$ 83,460	\$ 20,865	\$ 104,325	\$ 26,081	\$ 130,406
Shoreline Drive West Improvements	6	Shoreline Drive (CSAH-125)	Mound	Black Lake Rd							\$ 1,968,452	\$ 964,305	\$ 241,076	\$ 1,205,381	\$ 301,345	\$ 1,506,727